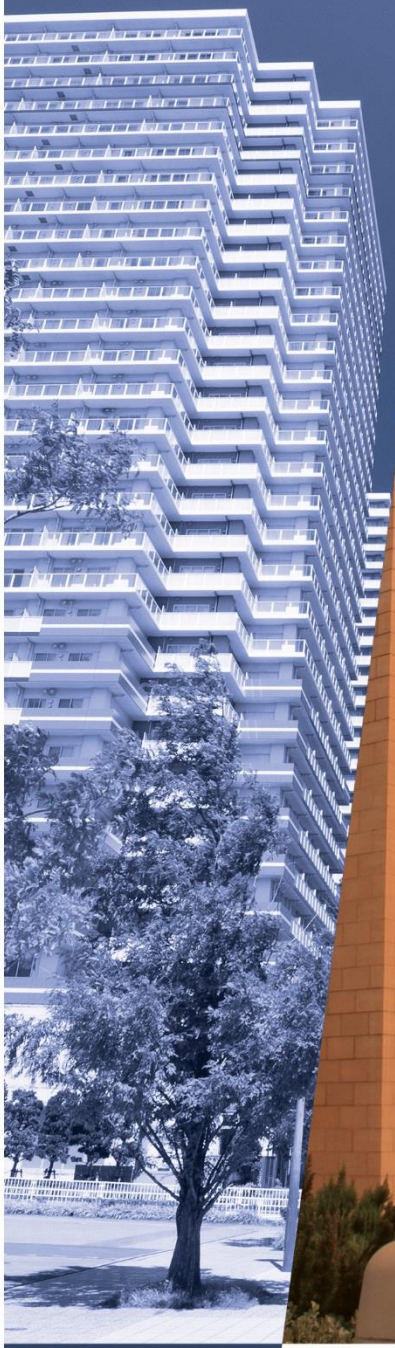
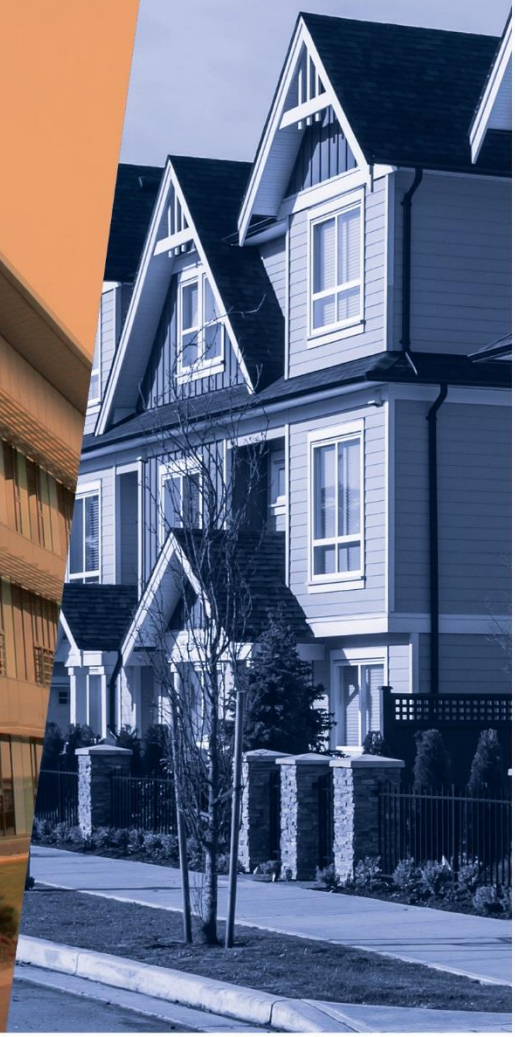
KELLER ENGINEERING

RESERVE FUND STUDY UPDATE WITHOUT SITE VISIT
CARLETON CONDOMINIUM CORPORATION No. 377, OTTAWA, ONTARIO





File # 18658
January 11, 2019

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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 June 22, 2015, a fiscal analysis and best current estimate, it is recommended that annual reserve fund contributions of Carleton Condominium Corporation No. 377 be increased **8.0% above** inflation for a total of **$165,000** and **$181,500** respectively, in fiscal years **2019/20** and **2020/21**. Increases in the annual contributions in fiscal year **2020/21** and all years thereafter are budgeted at **2.0% per year**, which is our assumed yearly construction cost increase. This funding plan, in our opinion, will provide adequate funds to carry out necessary repair work and will provide a surplus which will be required in later years to pay for major capital expenditures anticipated beyond the time period examined in this Reserve Fund Study.

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

- Repair and waterproofing of parking garage columns and shear walls added in fiscal year 2019/20 at the request of the Board
- Podium waterproofing membrane replacement postponed from 2019/20 to 2024/25 and spread across 3 years, 2024/25-2026/27
- Fencing replacement added in fiscal year 2019/20 and 2020/21 at the request of the Board
- Fencing increased above inflation in fiscal year 2041/42
- Balcony waterproofing adjusted for inflation in fiscal year 2027/28
- Replacement of solariums has been added from fiscal year 2018/19 to 2020/21
- Replacement of overhead garage doors postponed from 2026/27 to 2027/28
- Roof Replacement increased above inflation and postponed from fiscal year 2029/30 to 2033/34
- At the request of the Board a contingency allowance of $25,000 has been added to fiscal years 2020/21 and 2021/22 for miscellaneous items
- Repairs to the ventilation systems in fiscal year 2019/20 and 2020/21 added at the request of the Board
- Repairs to the heating system and A/C systems in fiscal year 2019/20 and 2020/21 added at the request of the board

Future Work

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

- Replacement of the windows
- Replacement of the mailboxes

Alex Brisbois, B.A.Sc.Civ.Eng.

Steve Christison, P.Eng

1.0 INTRODUCTION

1.1 Scope

The Board of Directors of Carleton Condominium Corporation No. 377 (CCC 377) commissioned Keller Engineering to prepare the following Reserve Fund Study Update. The work included the review of the current Reserve Fund Study Update with Site Visit 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

Ottawa-Carleton Standard Condominium Corporation No.377 is a 29-year old, 4-storey midrise containing 48 residential. The property, also known as "Village Square", is located at 310/320 Crichton Street, in Ottawa, Ontario.

The building structure consists of cast-in-place reinforced structure. The exterior is clad with brick masonry and the flat roof of the building is protected with an inverted roofing membrane system. The parking garage structure is a single story structure located under the building.

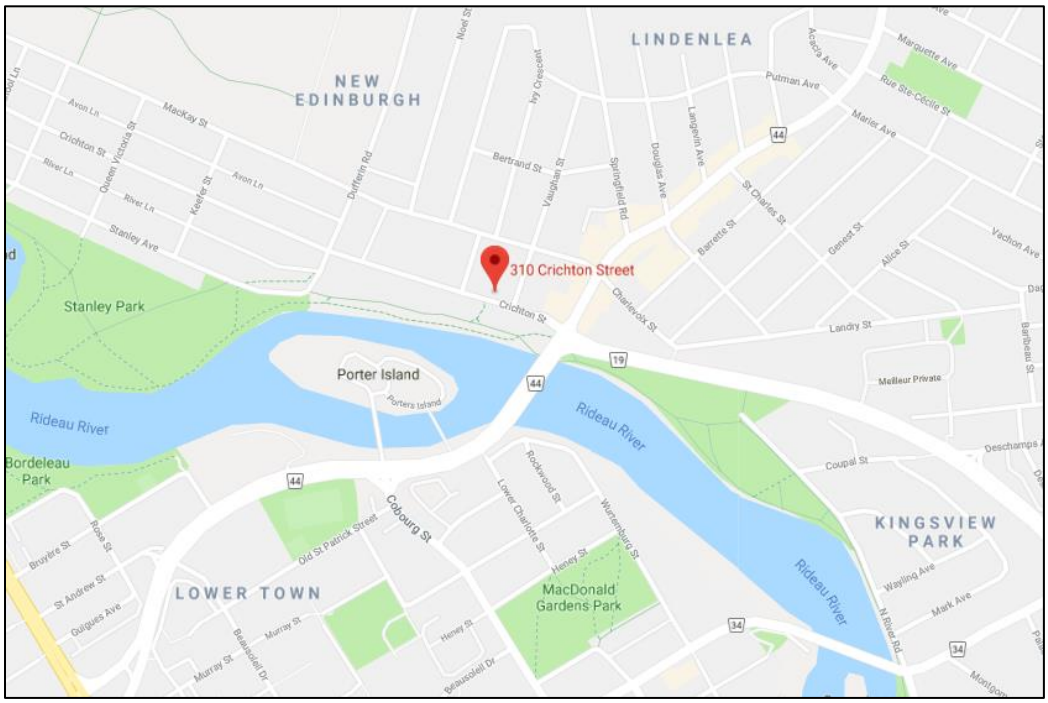


Fig.1: Location of CCC 377

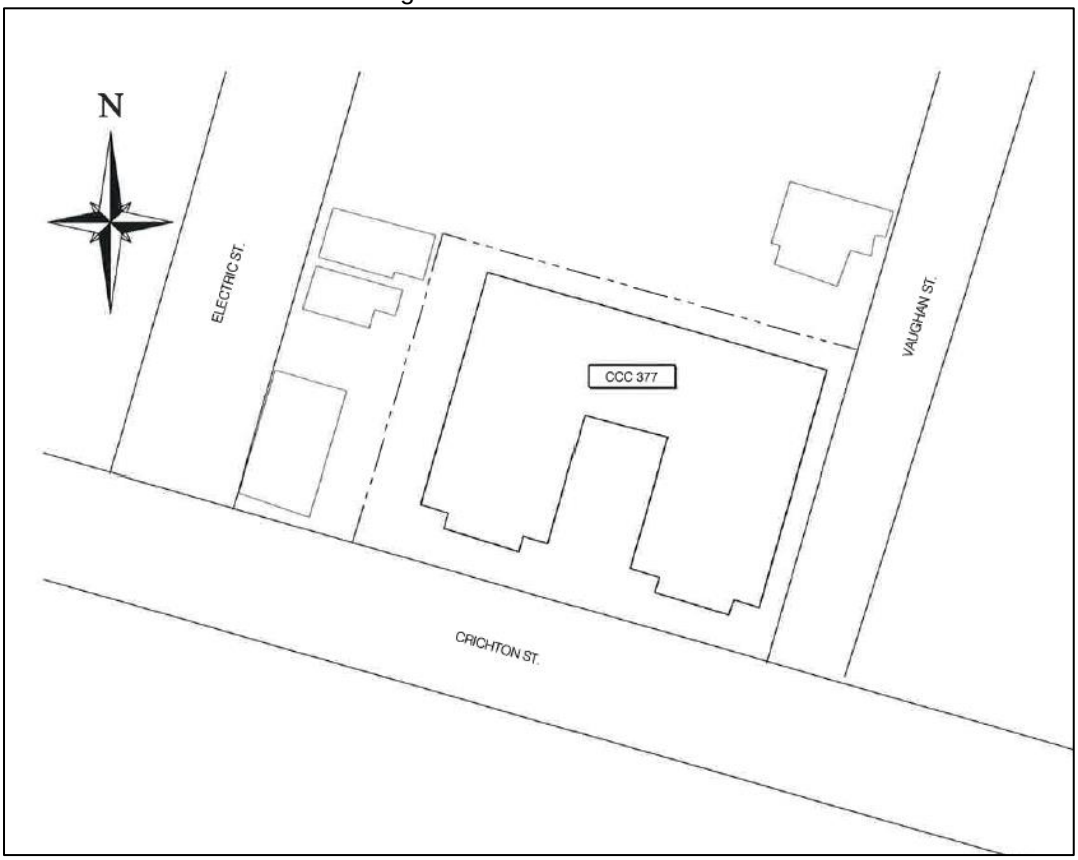


Fig. 2: Key Plan

1.3 References

Reference Materials were provided by Mr. Jim Mchugh, of Axia Property Management, Property Manager for CCC 377.

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 June 22, 2015; Keller Engineering
- Auditor's Statements
  - Fiscal Year 2017/18; dated February 28, 2018

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 Reserve Fund Study Update with Site Visit, 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

Over the past few years, the rate at which construction costs increase has varied significantly between -0.7% and 4.4%. An annual inflation rate of **2.0%** 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 **2.0%** will likely provide a reasonable representation of how prices will increase over the next few years.

INTEREST RATES

For this Reserve Fund Study, a **2.0%** 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.

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 ASSUMPTIONS AND LIMITATIONS

The accuracy of the discussions, conclusions and cost information contained in this study is limited to the extent of information available at this time. 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 is 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.

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 sewer cleaning when required, an allowance of **$2,700** has been made in fiscal year **2019/20 and every 5 years** thereafter.

.B In order to ensure funds are available to perform sewer inspections when required, an allowance of **$2,700** has been made in fiscal year **2024/25 and every 10 years** thereafter.

■

Underground Services Repair Allowance	
. Quantity	Allowance
. Cost (Clean)	$2,700
. Year(s)	2019/20, 2024/25 2029/30, 2034/35 2039/40, 2044/45
. Cost (Inspect)	$2,700
. Year(s)	2019/20, 2029/30 2039/40

5.1.2 Parking Garage

The single story reinforced concrete below grade parking garage is located beneath the condominium.

PARKING GARAGE STRUCTURE

The parking garage structure is constructed of reinforced concrete 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.

At the request of the Board, allowance for repairs to the concrete column and shear walls has been scheduled for fiscal year 2019/20.

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 Repairs of the parking garage structure is estimated to cost **$45,000** and this work has been budgeted in fiscal year **2019/20.**

■

Parking Garage Structure Repair Allowance	
. Qty	Allowance
. Cost	$45,000
. Year(s)	2019/20

PODIUM SLAB COVERED WITH LANDSCAPING

The landscaped covered podium is located on the south end of the property and is protected by a waterproofing membrane. The waterproofing under the landscaping has a typical service life of 20-35 years.

Landscaping Podium Waterproofing Replacement	
. Qty	570 m^2
. Cost	$225,000
. Year(s)	2024/25-2026/27

Due to fiscal constraints, the replacement of the waterproofing at the landscape podium area originally scheduled in fiscal year 2019/20 has been postponed to fiscal year 2024/25 through 2026/27.

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 podium waterproofing including all landscaping is estimated to cost **$225,000** and this work has been budgeted in fiscal year **2024/25** to **2026/27**.

ASPHALT PAVEMENT-ON-GRADE

Asphalt pavement has been installed on-grade in the parking garage. Asphalt pavement has a typical service life of 15-20 years.

Asphalt Pavement-on-Grade	
. Qty	2,050 m^2
. Cost	$104,600
. Year(s)	2022/23, 2042/43

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 asphalt pavement is estimated to cost **$104,600** and this work has been budgeted fiscal year **2022/23 and every 20 years** thereafter.

.D 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.

HEATED CONCRETE RAMP

The heated concrete ramp provides access to the parking garage from the south elevation. The heated concrete ramp will typically last the life of the complex.

Heated Concrete Ramp	
. Qty	60 m^2
. Cost	$41,800
. Year(s)	2021/22

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 heated concrete ramp is estimated to cost **$41,800** and this work has been budgeted in fiscal year **2021/22.**

5.1.3 Pavers

PRECAST PAVER WALKWAYS

The precast paver walkways are located on the terraces. Pavers 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 Minor repairs/resetting of the paver should be performed as required using funds from the operating budget.

5.1.4 Landscaping

LANDSCAPED GROUNDS

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

Landscaping Allowance	
. Qty	Allowance
. Cost	$15,700
. Year(s)	2023/24, 2033/34 2043/44

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 general landscaping when required, an allowance of **$15,700** has been made in fiscal year **2023/24 and every 10 years** thereafter to ensure funds are available when the work is required.
.B Minor repairs of the landscaping should be performed as required using funds from the operating budget.

TREE REMOVAL

There are a number of large/medium sized trees present throughout the complex, many of which are in close proximity to the buildings.

Tree Removal Allowance	
. Qty	Allowance
. Cost	$12,800
. Year(s)	2018/19
. Cost	$5,200
. Year(s)	2023/24, 2028/29 2033/34, 2038/38 2043/44, 2048/49

As per the information provided by the board, tree removal occurred during 2018/19.

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 Localized tree removal was carried out for **$12,800** in fiscal year **2018/19.**
.D In order to ensure funds are available to perform tree replacement when required, an allowance of **$5,200** has been made in fiscal year **2023/24 and every 5 years** thereafter.
.E Isolated replacement of the large/medium sized trees should be performed, as required, using funds from the operating budget.
.F Regular tree pruning should be performed to maintain the health of the existing trees and to control the growth of large trees, whose branches which overhang the roofs may cause damage to the asphalt shingle roofing or the wall cladding. This maintenance work should be covered by the operating budget.

5.1.5 Planters

PRECAST CONCRETE PLANTERS

The precast concrete planters are located at the front entrance of the building. The precast concrete planters 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:

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

BRICK PLANTERS

The brick clad planters are located throughout the complex. The brick planters have a typical surface life of 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:

.B In order to ensure funds are available to perform repairs to the brick planters when required, an allowance of **$15,700** has been made in fiscal year **2031/32 and every 15 years** thereafter to ensure funds are available when the work is required.

.C Minor repairs of the brick planters should be performed as required using funds from the operating budget.

Brick Planters Repair	
. Qty	Allowance
. Cost	$15,700
. Year(s)	2031/32, 2046/47

5.1.6 Fencing

WOOD FENCING

Wood fencing surrounds the property. Wood fencing has a typical service life of 25-30 years.

At the request of the Board, immediate replacement of portions of the perimeter fencing has been scheduled for fiscal years 2019/20 and 2020/21.

The allowance for play structure replacement has been increased above inflation to reflect current market values.

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 Isolated replacement of the wood property fencing is estimated to cost **$10,000** and this work has been budgeted in fiscal years **2019/20 and 2020/21.**

.B Replacement of the wood property fencing is estimated to cost **$28,000** and this work has been budgeted in fiscal year **2041/42.**

Wood Property Fencing Replacement	
. Qty	105 m
. Cost (Iso. Replace)	$10,000
. Year(s)	2019/20, 2020/21
. Cost	$28,000
. Year(s)	2041/42

.C Costs for repainting of the fencing have been included in the Exterior Painting Section.

5.1.7 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.

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.

5.1.8 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.

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 Minor repairs of the balcony structure should be performed, as required, using funds from the operating budget.

WATERPROOFING MEMBRANE

The balcony slabs on level 4 are protected with an elastomeric traffic bearing membrane. The traffic bearing membrane has a typical service life of 15-20 years.

Traffic Bearing Membrane Repair/Replacement	
. Qty	80 m^2
. Cost (Repair)	$47,600
. Year(s)	2018/19
. Cost (Replace)	$80,000
. Year(s)	2027/28, 2047/48

The allowance for replacement of the balcony traffic bearing waterproofing membrane 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 Repair of the traffic bearing membrane is estimated to cost **$47,600** and this work has been budgeted in fiscal year **2018/19.**

.C Replacement of the traffic bearing membrane is estimated to cost **$80,000** and this work has been budgeted in fiscal year **2027/28** and **every 20 years** thereafter.

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

BALCONY RAILINGS

The steel railings are located at the balcony edges. The railings 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:

.E Replacement of the balcony railings is estimated to cost **$22,500** and this work has been budgeted in fiscal year **2027/28.**

Balcony Railings	
. Qty	200 m^2
. Cost	$22,500
. Year(s)	2027/28

5.1.9 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.

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 **$10,500** has been made in fiscal year **2020/21 and every 5 years** thereafter.
.B Minor repairs of the masonry should be performed, as required, using funds from the operating budget.

Masonry Veneer Repairs	
. Qty	Allowance
. Cost	$10,500
. Year(s)	2020/21, 2025/26 2030/31, 2035/36 2040/41, 2045/46

5.1.10 Precast Concrete

PRECAST CONCRETE CAP STONES

The precast concrete cap stones will typically last the life of the complex; however, significant repairs are generally required after 40 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 isolated repairs when required, an allowance of **$31,400** has been made in fiscal year **2025/26**.
.B Minor patch repairs of the concrete cap stones should be performed, as required, using funds from the operating budget.

Precast Concrete Cap Stones Repair	
. Qty	Allowance
. Cost	$31,400
. Year(s)	2025/26

5.1.11 Exterior Coatings

EXTERIOR PAINTING

Exterior painting and staining has been performed on the steel railings and fencing. Exterior painting has a typical service life of 5-6 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 Exterior painting and staining is estimated to cost **$15,700** and this work has been budgeted in fiscal year **2023/24** and **every 6 years** thereafter.
.B Minor repainting and staining should be performed, as required, using funds from the operating budget.

Exterior Painting	
. Qty	Allowance
. Cost	$15,700
. Year(s)	2023/24, 2029/30 2035/36, 2041/42 2047/48

5.1.12 Caulking

CAULKING

The caulking is located at the window and door openings. The caulking has a typical service life of 10-12 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 caulking is estimated to cost **$35,000** and this work has been budgeted in fiscal year **2027/28** and **every 12 years** thereafter.
.B Minor repairs of the caulking should be performed, as required, using funds from the operating budget.

Caulking	
. Qty	Allowance
. Cost	$36,600
. Year(s)	2027/28, 2039/40

5.1.13 Windows & Balcony Doors

WINDOWS

The vinyl framed windows provide the primary fenestration for the building. The windows 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:

.A Replacement of the windows is estimated to cost **$300,000** and this work has been budgeted **beyond the 30-year planning period** of this study.
.B Minor repairs including replacement of hardware, screens, weatherstripping and isolated thermopanes should be performed, as required, using funds from the operating budget.

Window Replacement	
. Qty	444 m^2
. Cost	$300,000
. Year(s)	Beyond 2047/48

BALCONY DOORS

The vinyl sliding doors 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.

Balcony Door Replacement	
. Qty	57 Units
. Cost	$62,700
. Year(s)	2021/22

We recommend the following work be anticipated and funded:

.C Replacement of the balcony door is estimated to cost **$62,700** and this work has been budgeted in fiscal year **2021/22**
.D Minor repairs including replacement of hardware, screens, weatherstripping and isolated thermopanes should be performed, as required, using funds from the operating budget.

SOLARIUMS

The solariums are located on the fourth floor balconies. The solariums have a typical service life of 30-40 years.

Solarium Replacement	
. Qty	6 Units
. Cost	$210,000
. Year(s)	2018/19 – 2020/21

The replacement of the solarium which was originally scheduled in fiscal year 2017/18 was not completed therefore it has been rescheduled to fiscal year 2018/19 through 2020/21. The allowance has also been adjusted above inflation.

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:

.E Replacement of the solariums is estimated to cost **$210,000** and this work has been budgeted in fiscal year **2018/19 through 2020/21.**
.F Minor repairs such as the replacement of failed glazing seals should be performed, as required, using funds from the operating budget.

SKYLIGHTS

The skylights are located on the fourth floor. The skylights have a typical service life of 15-20 years.

Skylight Replacement	
. Qty	12 Units
. Cost	$41,800
. Year(s)	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 solariums is estimated to cost **$41,800** and this work has been budgeted in fiscal year **2032/33.**
.H Minor repairs such as the replacement of failed glazing seals should be performed, as required, using funds from the operating budget.

5.1.14 Doors

MAIN ENTRANCE

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

Entrance Door Replacement	
. Qty.	2
. Cost	$35,700
. Year(s)	2045/46

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 doors is estimated to cost **$35,700** and this work has been budgeted in fiscal year **2045/46**, in conjunction with the other project.
.B Minor repairs of the main entrance doors should be performed, as required, using funds from the operating budget.

UNIT SUITE DOOR

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

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 unit suite doors is estimated to cost **$94,100** and this work has been budgeted in fiscal year **2036/37.**
.D Minor repairs of the unit suite doors should be performed, as required, using funds from the operating budget.

Unit Suite Door Replacement	
. Qty.	Allowance
. Cost	$94,100
. Year(s)	2036/37

OVERHEAD GARAGE DOORS

The overhead garage doors have a typical service life of 15-20 years.

Due to fiscal constraints, the overhead garage door replacement originally scheduled in fiscal year 2026/27 has been postponed to fiscal year 2027/28.

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:

.E Replacement of the overhead garage doors is estimated to cost **$15,700** and this work has been budgeted in fiscal year **2027/28 and every 15 years** thereafter.
.F Minor repairs of the garage doors should be performed, as required, using funds from the operating budget.

Garage Door Replacement	
. Qty.	2
. Cost	$15,700
. Year(s)	2027/28, 2042/43

5.1.15 Roofing Systems

INVERTED ROOFING SYSTEM

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

Due to fiscal constraints, the inverted roofing system replacement originally scheduled in fiscal year 2029/30 has been to fiscal year 2033/34.

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:

Inverted Roofing System Replacement	
. Qty	1,420 m^2
. Cost	$335,000
. Year(s)	2033/34

.A Replacement of the inverted roofing membrane system is estimated to cost **$335,000** and this work has been budgeted in fiscal year **2033/34 and every 25 years** thereafter.
.B In order to ensure funds are available to perform roof maintenance, an allowance of **$10,500** has been allocated in fiscal year **2018/19 and every 2 years** thereafter.
.C Minor repairs of the inverted roofing membrane system should be performed, as required, using funds from the operating budget.

Roof Maintenance Contingency Allowance	
. Qty	Allowance
. Cost	$10,500
. Year(s)	2018/19, 2020/21, 2022/23, 2024/25, 2026/27, 2028/29, 2030/31, 2032/33, 2034/35, 2036/37, 2038/39, 2040/41, 2042/43, 2044/45, 2046/47, 2048/49

METAL ROOFING SYSTEM

The metal roofing system 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:

.D Replacement of the metal roofing system is estimated to cost **$31,300** and this work has been budgeted in fiscal year **2024/25.**
.E Minor repairs of the metal roofing system should be performed, as required, using funds from the operating budget.

Metal Roofing System Replacement	
. Qty	26 m^2
. Cost	$31,300
. Year(s)	2024/25

5.1.16 Interior Finishes

LOBBY

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.

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 the refinishing of the lobby, an allowance of **$8,400** has been made available for fiscal year **2040/41 and every 30 years** thereafter.
.B Minor repairs to the furniture or finishes should be performed, as required, using funds from the operating budget.

Lobby Refinishing Allowance	
. Qty	Allowance
. Cost	$8,400
. Year(s)	2040/41

STAIRWELLS

Generally major renovations of the stairwells occur after 30-40 years of service as the original finishes appear dated. Typically, the furniture requires replacement every 10 years.

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:

Stairwell Paint	
. Qty	Allowance
. Cost	$20,900
. Year(s)	2028/29, 2043/44

.C In order to ensure funds are available to replace furniture when required, an allowance of **$20,900** has been made in fiscal year **2028/29 and every 15 years** thereafter.
.D Minor repairs to the furniture or finishes should be performed, as required, using funds from the operating budget.

CORRIDOR PAINT & WALLPAPER

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

Corridor Paint & Wallpaper	
. Qty	Allowance
. Cost	$102,000
. Year(s)	2030/31-2031/32

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 to refinish the corridor and replace the wallpaper when required, an allowance of **$102,000** has been budgeted **equally over 2 years beginning** in fiscal year **2030/31 and every 15 years** thereafter.
.F Minor repairs to the corridor paint and wallpaper should be performed, as required, using funds from the operating budget.

CARPET

Carpet has a typical service life of 10-15 years.

Carpet Replacement	
. Qty	Allowance
. Cost	$73,200
. Year(s)	2030/31, 2045/46

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 In order to ensure funds are available to replace the carpet when required, an allowance of **$73,200** has been made in fiscal year **2030/31 and every 15 years** thereafter.
.H Minor repairs to the carpet should be performed, as required, using funds from the operating budget.

5.1.17 Garbage Chutes

GARBAGE CHUTES

The garbage chutes are located throughout the building and typically have a service life of 50 years.

Garbage Chute Replacement	
. Qty	Allowance
. Cost	$83,600
. Year(s)	2036/37

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 replace the garbage chutes when required, an allowance of **$83,600** has been made in fiscal year **2036/37 and every 50 years** thereafter.
.B Minor repairs to the furniture or finishes should be performed, as required, using funds from the operating budget.

5.1.18 Miscellaneous

MAIL BOXES

The mail boxes located in the building lobby typical have a service life of 50 years.

Mailboxes	
. Qty	Allowance
. Cost	$5,500
. Year(s)	Beyond 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:

.A Total replacement mailboxes is estimated to cost **$5,500**, and this work has been budgeted **beyond the 30-year planning period** of this study

STORAGE LOCKERS

The storage lockers have a typical service life of 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.

CONTINGENCY

At the request of the Board, a set amount has been allocated as a contingency for unexpected expenses.

Contingency	
. Qty	Allowance
. Cost	$25,000
. Year(s)	2020/21, 2021/22

We recommend the following work be anticipated and funded:

.B A set amount of **$25,000** has been budgeted for fiscal years **2020/21 and 2021/22**

5.2 Electrical

5.2.1 Electrical Distribution

MAIN HYDRO EQUIPMENT

The main hydro equipment consists of a pad mounted transformer owned by Hydro Ottawa, primary transformers, load break switches and 15,000V breakers located in the main hydro vault. The primary transformers and associated load breaks switches and main breakers are owned by the condominium. Main hydro equipment has a typical service life of 40-50 years.

Hydro Vault Equipment Replacement	
. Qty	Allowance
. Cost	$103,600
. Year(s)	2026/27

Hydro Vault Equipment Maintenance	
. Qty	Allowance
. Cost	$12,500
. Year(s)	2023/24, 2039/40 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/overhaul of the main hydro equipment is estimated to cost **$103,600** and this work has been budgeted in fiscal year **2026/27.**

.B Maintenance of the hydro vault has been estimated at **$12,600** and has been budgeted for fiscal year **2023/24 and every 8 years** thereafter.

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

MAIN DISCONNECT SWITCHGEAR

The main disconnect switchgear is a moulded case based system with a 2000A, 120/208V switch located in the main electrical room and protects and isolates the main electrical feed into the building. Main disconnect switchgear has a typical service life of 40-45 years.

Main Disconnect Switchgear	
. Qty	Allowance
. Cost	$37,000
. Year(s)	2026/27

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.

Main Disconnect Switchgear	
. Qty	Allowance
. Cost	$6,300
. Year(s)	2020/21, 2025/26 2030/31, 2035/36, 2040/41 2045/46

We recommend the following work be anticipated and funded:

.D Replacement of the main disconnect switchgear is estimated to cost **$37,000** and this work has been budgeted in fiscal year **2026/27.**

.E Maintenance of the hydro vault has been estimated at **$6,300** and has been budgeted in fiscal year **2020/21 and every 5 years** thereafter.

Electrical Switches	
. Qty	Allowance
. Cost	$37,000
. Year(s)	2026/27

.F Replacement of the electrical switches is estimated to cost **$37,000** and this work has been budgeted in fiscal year **2026/27.**

.G 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.

METER CENTERS

The 48 metering sockets located in the main electrical room within the building provide individual electrical metering to the suites. Metering sockets have a typical service life of 45-50 years.

Metering Sockets	
. Qty	48
. Cost	$31,400
. Year(s)	2021/22

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 metering sockets is estimated to cost **$31,400** and this work has been budgeted in fiscal year **2021/22.**

DISTRIBUTION BREAKER PANELS

The 120/208 volt distribution breaker panels are installed in throughout the building and they 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.

120/208 Volt Electrical Distribution Breaker Panels	
. Qty	3
. Cost	$15,800
. Year(s)	2026/27

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:

.I Replacement of the 120/208 Volt breaker panels and moulded case breakers is estimated to cost **$15,800** and this work has been budgeted in fiscal year **2026/27**

DRY CORE TRANSFORMERS

The 2 dry core transformers of 30 kVA reduce the voltage of the electrical feed. Dry core transformers have a typical service life of 35-40 years.

Dry Core Transformers	
. Qty	2
. Cost	$20,900
. Year(s)	2022/23

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:

.J Replacement or overhaul of the dry core transformers is estimated to cost **$20,900** and this work has been budgeted in fiscal year **2022/23.**

INFRARED THERMGRAPHY

Infrared thermography should be performed on switches, panels, disconnects, transformer, and starters to determine “hot spots” on a regular basis. A qualified electrician should be employed to open and close panels and to correct immediate concerns during this inspection.

Infrared Thermography	
. Qty	Allowance
. Cost	$3,600
. Year(s)	2020/21, 2025/26 2030/31, 2035/36, 2040/41 2045/46

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 Employment of an electrician for the infrared inspection is estimated to cost **$3,600** and has been budgeted for fiscal year **2020/21 and every 5 years** thereafter.

5.2.2 Lighting

COMMON LIGHT FIXTURES

The common light fixtures are located throughout the common areas of the building. Common light fixtures 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.

5.2.3 Fire Alarm System

FIRE ALARM PANEL

An “Edwards” fire alarm panel is installed as the main fire alarm system. Fire alarm panels 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:

.A Replacement of the fire alarm panel is estimated to cost **$12,500** and this work has been budgeted in fiscal year **2041/42.**

Fire Alarm Panel	
. Cost	$12,500
. Year(s)	2041/42

FIRE ALARM SENSORS

The smoke detectors, heat sensors, and pull stations provide monitoring for the fire alarm system. The smoke detectors, heat sensors, and Pull Stations 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:

.B Replacement of the smoke detectors, heat sensors, and pull stations is estimated to cost **$26,100** and this work has been budgeted in fiscal year **2031/32 and every 15 years thereafter**.

Fire Alarm Sensors	
. Qty	Allowance
. Cost	$26,100
. Year(s)	2031/32, 2046/47

5.2.4 Emergency Power System

BATTERY PACK UNITS

The battery pack units located throughout the building provide emergency power for emergency lights and exit signs. The battery pack units 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:

.A Replacement of the battery pack units should be performed using funds from the operating budget.

5.2.5 Electrical Heating Systems

FORCED FLOW ELECTRIC HEATERS

The forced flow electric heaters located in the entryways. The forced flow electric heaters 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 forced flow electric heaters is estimated to cost **$6,800** and this work has been budgeted in fiscal year **2040/41**

Forced Flow Electric Heaters	
. Qty	Allowance
. Cost	$6,800
. Year(s)	2040/41

ELECTRIC SPACE HEATERS

The electric space heaters located in and they provide primary heating to the building. The electric space heaters 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:

.B Replacement of the electric space heaters should be performed using funds from the operating budget.

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. The parking garage ramp electric snow melt system has a typical service life of 30-35 years.

Garage Ramp Snow Melt System	
. Qty	1
. Cost	$62,700
. Year(s)	2021/22

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 parking garage ramp electric snow melt system including removal and reinstatement of concrete slab is estimated to cost **$62,700** and this work has been budgeted in fiscal year **2021/22**.

5.2.6 Security Systems

DOOR ENTRY SYSTEM

The Mircom door entry system provide visitor access to the building. The door entry system has a typical service life of 25-30 years.

Door Entry System	
. Cost	$14,600
. Year(s)	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 door entry system is estimated to cost **$14,600** and this work has been budgeted in fiscal year **2040/41**.

5.3 Mechanical

5.3.1 Ventilation System

CORRIDOR PRESSURIZATION UNIT

The two “Reznor” gas-fired corridor pressurization units equipped with cooling coils have a typical service life of 25-30 years.

Corridor Pressurization Unit	
. Qty	2
. Cost	$73,500
. Year(s)	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 corridor pressurization unit is estimated to cost **$73,500** and this work has been budgeted in fiscal year **2040/41.**

EXHAUST FANS

The multiple exhaust fans located in the electrical vault, and other common areas provide ventilation and temperature control. Exhaust fans have a typical service life of 30-35 years.

Exhaust Fans	
. Cost (repair)	$10,000
. Year(s)	2019/20, 2020/21
. Cost (replace)	$6,300
. Year(s)	2040/41

At the request of the Board, the exhaust fans in the bathrooms and kitchen require repairs, has been allocated to fiscal years 2019/20 through 2020/21.

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 Repair of the exhaust fans in the bathrooms and kitchens is estimated to cost **$10,000** and this work has been budgeted in fiscal years **2019/20 and 2020/21**.

.C Replacement of the exhaust fans is estimated to cost **$6,300** and this work has been budgeted in fiscal year **2040/41.**

GARAGE VENTILATION

The axial exhaust fans for the parking garage ventilation are set to run continuously. Axial exhaust fans and motorized dampers have a typical service life of 30-35 years.

Garage Exhaust Fans	
. Qty	Allowance
. Cost	$6,300
. Year(s)	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:

.D Replacement of the axial exhaust fans and motorized dampers is estimated to cost **$6,300**, and this work has been budgeted **in fiscal year 2046/47.**

GARAGE GAS MONITORING SYSTEM

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

Gas Monitoring Controller	
. Qty	1
. Cost	$5,200
. Year(s)	2026/27

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:

.E Replacement of the gas monitoring is estimated to cost **$5,300** and this work has been budgeted in fiscal year **2026/27** and **every 15 years** thereafter.

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

.G Replacement of the CO sensors is estimated to cost **$6,300** and this work has been budgeted in fiscal year **2020/21** and **every 5 years** thereafter.

CO Sensors	
. Qty	
. Cost	$6,300
. Year(s)	2020/21, 2025/26 2030/31, 2035/36, 2040/41 2045/46

5.3.2 Heating & A/C Systems

GARAGE FORCED FLOW GAS HEATERS

The eight forced flow gas fired unit heaters located in the garage date from the original construction of the building. The typical life expectancy of these heaters is 20-25 years.

At the request of the Board, the garage forced flow heaters, originally scheduled in fiscal years 2015/16 through 2019/20 has been postponed to fiscal year 2019/20 through 2022/23.

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 heating boilers estimated to cost **$40,000** and this work been budgeted **equally over 4 years** beginning in fiscal year **2019/20 to 2022/23** and **every 25 years thereafter.**

.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 to be performed using funds from the operating budget.

Garage Forced Flow Heaters	
. Qty	8
. Cost	$40,000
. Year(s)	2019/20-2022/23 2044/45-2047/48

CHILLER

The Carrier 45 ton air cooled chiller provides chilled water to the fan coils in the suites and common areas. Chillers 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:

.C Replacement of the chiller is estimated to cost **$323,100** and this work has been budgeted in fiscal year **2039/40.**

Air Cooled Chillers	
. Qty	2
. Cost	$323,100
. Year(s)	2039/40

CHILLED WATER LOOP PUMPS

The 2 in-line chilled water loop pumps distribute chilled water throughout the building to the inside the units, and common areas. Chilled water loop pumps have a typical service life of 20-25 years.

Chilled Water Loop Pumps	
. Qty	2
. Cost	$8,400
. Year(s)	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:

.D Replacement of the chilled water loop pumps is estimated to cost **$8,400** and this work has been budgeted in fiscal year **2040/41** and **every 25 years thereafter.**

EXPANSION TANK

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

Expansion Tank	
. Qty	2
. Cost	$4,200
. Year(s)	2024/25, 2039/40

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 expansion tank is estimated to cost **$4,200** and this work has been budgeted in fiscal year **2024/25** and **every 15 years** thereafter.

5.3.3 Plumbing Systems

DOMESTIC HOT AND COLD WATER SYSTEMS

The domestic hot and cold water systems are in overall satisfactory condition. Minor deficiencies such as surface corrosion on pipes, fittings, as well as damaged/missing pipe insulation should be corrected as they arise with funds from the operating budget.

Piping & Draining System Repair Allowance	
. Qty	Allowance
. Cost	$10,500
. Year(s)	2020/21, 2030/31 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 Repair of the piping and draining system is estimated to cost **$10,500** and this work has been budgeted in fiscal year **2020/21** and **every 10 years thereafter.**

ELECTRIC HOT WATER HEATERS

The Giant 40 Gallon electric hot water heater, was manufactured in 1986 and provides hot water for the housekeeping room. The service life of this equipment is 10-15 years.

Electric Hot Water Heaters	
. Qty	1
. Cost	$1,000
. Year(s)	2025/26, 2035/36 2045/46

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 electric hot water heaters is estimated to cost **$1,000** and this work has been budgeted in fiscal year **2025/26** and **every 10 years thereafter.**

5.3.4 Sump Pumps

SUMP PUMP

The elevator shaft pit sump pumps are located on their respective pits. Sump Pumps have a typical service life of 25-30 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 Replacement of the elevator shaft pit sump sumps is estimated to cost **$3,100** and this work has been budgeted in fiscal year **2039/40.**

Elevator Shaft Pit Sump Pumps	
. Qty	1
. Cost	$3,100
. Year(s)	2039/40

5.3.5 Elevators

ELEVATORS

The 2 Hydraulik hydraulic elevators installed in the building provide access to all floors in the building. Hydraulic elevators have a typical service life of 30-35 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:

.A Replacement of the elevators control system is estimated to cost **$229,000** and this work has been budgeted in fiscal year **2044/45.**

.B Replacement of the elevator cab interiors is estimated to cost **$42,900** and this work has been budgeted in fiscal year **2044/45**.

.C Replacement of the elevator hydraulic cylinder is estimated to cost **$230,000** and this work has been budgeted in fiscal year **2038/39.**

.D An allowance for the elevator contingency is estimated to cost **$5,200** and this work has been budgeted in fiscal year **2020/21 and every 5 years thereafter.**

Elevator Control Modernization	
. Qty	2
. Cost	$229,000
. Year(s)	2044/45

Elevator Cab Interior Modernization	
. Qty	1
. Cost	$42,900
. Year(s)	2044/45

Elevator Hydraulic Cylinder	
. Qty	Allowance
. Cost	$230,000
. Year(s)	2038/39

Elevator Contingency Allowance	
. Qty	Allowance
. Cost	$5,200
. Year(s)	2020/21, 2025/26, 2030/31, 2035/36, 2040/41, 2045/46

5.3.6 Fire Protection Systems

FIRE PROTECTION SYSTEMS

The Fire Protection Systems consists of fire extinguishers, fire hose cabinets, and sprinklers installed throughout the building. Fire Protection Systems have a varying 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:

.A Minor repairs to the fire protection systems should be performed using funds from the operating budget.

APPENDIX A: SPREADSHEET FOR MAJOR REPAIR AND REPLACEMENT COSTS

CCC 377: Spreadsheet For Major Repair & Replacement Costs, Fiscal Years 2018/19 to 2047/48

AGE OF COMPLEX		32 Years	33 Years	34 Years	35 Years	36 Years	37 Years	38 Years	39 Years	40 Years	41 Years	42 Years	43 Years	44 Years	45 Years	46 Years	47 Years
REPAIR/REPLACEMENT ITEMS [2]		2018/19	2019/20	2020/21	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
5.1	**CIVIL, ARCHITECTURAL**																
5.1.1	**Site Services**		$5,400					$2,700					$5,400				
5.1.2	**Parking Garage**		$45,000		$41,800	$104,600		$75,000	$75,000	$75,000							
5.1.3	**Pavers**																
5.1.4	**Landscaping**	$12,800					$20,900					$5,200					$20,900
5.1.5	**Planters**														$15,700		
5.1.6	**Fencing**		$10,000	$10,000													
5.1.7	**Foundation Walls**																
5.1.8	**Balconies**	$47,600									$102,500						
5.1.9	**Masonry**			$10,500					$10,500					$10,500			
5.1.10	**Precast Concrete**								$31,400								
5.1.11	**Exterior Coatings**						$15,700						$15,700				
5.1.12	**Caulking**										$36,600						
5.1.13	**Windows & Balcony Doors**	$70,000	$70,000	$70,000	$62,700											$41,800	
5.1.14	**Doors**										$15,700						
5.1.15	**Roofing Systems**	$10,500		$10,500		$10,500		$31,300		$10,500		$10,500		$10,500		$10,500	$335,000
5.1.16	**Interior Finishes**	$15,000										$20,900		$175,200	$102,000		
5.1.17	**Garbage Chutes**																
5.1.18	**Miscellaneous Items**			$25,000	$25,000												
5.2	**ELECTRICAL SYSTEMS**																
5.2.1	**Electrical Distribution**			$9,900	$31,400	$20,900	$12,500		$9,900	$193,400				$9,900	$12,500		
5.2.2	**Lighting**																
5.2.3	**Fire Alarm System**														$26,100		
5.2.4	**Emergency Power System**																
5.2.5	**Electrical Heating System**				$62,700												
5.2.6	**Security System**																
5.3	**MECHANICAL SYSTEMS**																
5.3.1	**Ventilation System**		$10,000	$16,300					$6,300	$5,200				$6,300			
5.3.2	**Heating & A/C System**		$10,000	$10,000	$10,000	$10,000		$4,200									
5.3.3	**Plumbing System**			$10,500					$1,000					$10,500			
5.3.4	**Sump Pumps**																
5.3.5	**Elevators**			$5,200					$5,200					$5,200			
5.3.6	**Fire Protection System**																
	Reserve Fund Study Update	$4,300			$7,700			$4,300			$7,700			$4,300			$7,700
YEARLY EXPENDITURE TOTALS		$160,200	$150,400	$177,900	$241,300	$146,000	$49,100	$117,500	$139,300	$284,100	$162,500	$36,600	$21,100	$232,400	$156,300	$52,300	$363,600
EXPENDITURES INCL. INFLATION [3]		$160,200	$153,408	$185,087	$256,069	$158,035	$54,210	$132,324	$160,012	$332,868	$194,203	$44,615	$26,235	$294,739	$202,191	$69,009	$489,358
CONTRIBUTIONS FROM FEES		$150,000	$165,000	$181,500	$185,130	$188,833	$192,609	$196,461	$200,391	$204,398	$208,486	$212,656	$216,909	$221,247	$225,672	$230,186	$234,790
ADDITIONAL CONTRIBUTIONS																	
INTEREST CONTRIBUTIONS [1]		$1,065	$1,168	$955	$0	$98	$2,830	$4,131	$4,982	$2,472	$2,766	$6,141	$10,034	$8,722	$9,322	$12,687	$7,803
REMAINING RESERVE FUND		$129,328	$142,089	$139,457	$68,517	$99,413	$240,642	$308,910	$354,270	$228,273	$245,323	$419,504	$620,213	$555,443	$588,247	$762,110	$515,345

ESTIMATED RESERVE FUND = $138,463 February 28, 2018

CURRENT ANNUAL CONTRIBUTIONS = $150,000 March 1, 2018

FUTURE ANNUAL CONTRIBUTIONS = $165,000 March 1, 2019

ANN. INCREASE IN CONTRIBUTIONS = 8.0 % ABOVE INFLATION PER YEAR FOR 2 YEARS, STARTING IN THE FISCAL YEAR 2019/20

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 2.0% is used in the calculation

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

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		AGE OF COMPLEX	
2034/35	2035/36	2036/37	2037/38	2038/39	2039/40	2040/41	2041/42	2042/43	2043/44	2044/45	2045/46	2046/47	2047/48	TOTALS	REPAIR/REPLACEMENT ITEMS	
															5.1	CIVIL, ARCHITECTURAL
$2,700					$5,400					$2,700				$24,300	5.1.1	Site Services
								$104,600						$521,000	5.1.2	Parking Garage
														$0	5.1.3	Pavers
				$5,200					$20,900					$85,900	5.1.4	Landscaping
												$15,700		$31,400	5.1.5	Planters
							$28,000							$48,000	5.1.6	Fencing
														$0	5.1.7	Foundation Walls
													$80,000	$230,100	5.1.8	Balconies
	$10,500					$10,500					$10,500			$63,000	5.1.9	Masonry
														$31,400	5.1.10	Precast Concrete
	$15,700						$15,700						$15,700	$78,500	5.1.11	Exterior Coatings
					$36,600									$73,200	5.1.12	Caulking
														$314,500	5.1.13	Windows & Balcony Doors
		$94,100						$15,700			$35,700			$161,200	5.1.14	Doors
$10,500		$10,500		$10,500		$10,500		$10,500		$10,500		$10,500		$513,300	5.1.15	Roofing Systems
						$8,400			$20,900		$125,500			$467,900	5.1.16	Interior Finishes
		$83,600												$83,600	5.1.17	Garbage Chutes
														$50,000	5.1.18	Miscellaneous Items
															5.2	ELECTRICAL SYSTEMS
	$9,900				$12,500	$9,900					$9,900		$12,500	$355,100	5.2.1	Electrical Distribution
														$0	5.2.2	Lighting
							$12,500					$26,100		$64,700	5.2.3	Fire Alarm System
														$0	5.2.4	Emergency Power System
						$6,800								$69,500	5.2.5	Electrical Heating System
						$14,600								$14,600	5.2.6	Security System
															5.3	MECHANICAL SYSTEMS
	$6,300					$86,100					$6,300	$6,300		$149,100	5.3.1	Ventilation System
	$10,000	$10,000	$10,000	$10,000	$327,300	$8,400								$419,900	5.3.2	Heating & A/C System
	$1,000					$10,500					$1,000			$34,500	5.3.3	Plumbing System
					$3,100									$3,100	5.3.4	Sump Pumps
	$5,200			$230,000		$5,200				$271,900	$5,200			$533,100	5.3.5	Elevators
														$0	5.3.6	Fire Protection System
		$4,300			$7,700			$4,300			$7,700			$60,000		Reserve Fund Study Update
$13,200	$58,600	$202,500	$10,000	$255,700	$392,600	$170,900	$56,200	$135,100	$41,800	$285,100	$201,800	$58,600	$108,200	$4,480,900	YEARLY EXPENDITURE TOTALS	
$18,121	$82,054	$289,220	$14,568	$379,957	$595,051	$264,208	$88,622	$217,300	$68,577	$477,092	$344,450	$102,024	$192,146	$6,045,953	EXPENDITURES INCL. INFLATION	
$239,485	$244,275	$249,161	$254,144	$259,227	$264,411	$269,699	$275,093	$280,595	$286,207	$291,931	$297,770	$303,725	$309,800	$7,039,795	CONTRIBUTIONS FROM FEES	
														$0	ADDITIONAL CONTRIBUTIONS	
$12,339	$15,783	$15,248	$20,295	$18,235	$11,935	$12,231	$16,151	$17,685	$22,335	$19,022	$18,410	$22,753	$25,500	$323,100	INTEREST CONTRIBUTIONS	
$749,049	$927,053	$902,242	$1,162,112	$1,059,618	$740,914	$758,636	$961,259	$1,042,240	$1,282,205	$1,116,066	$1,087,797	$1,312,251	$1,455,404	$1,455,404	REMAINING RESERVE FUND	
										REMAINING RESERVE FUND IN 2019 DOLLARS				$819,556	

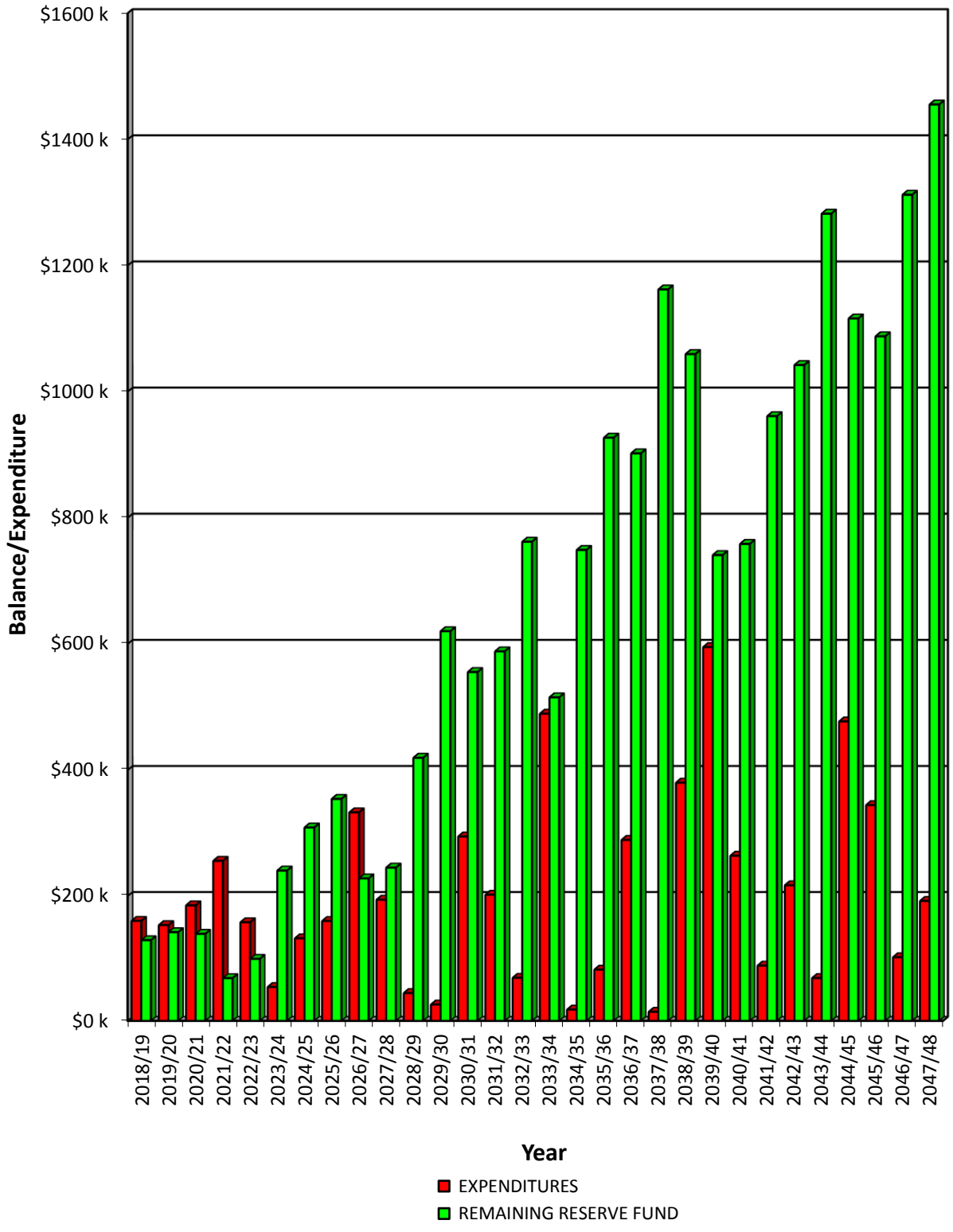
3) Inflation assumed to be at an average rate of 2.0% over the time frame examined above.

4) The inflation increase of 4.4% 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.

KELLER ENGINEERING

CCC 377 - Reserve Fund Annual Expenditures/Closing Balance



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. 377

The Board has received and reviewed a Class 3 - Update without Site Inspection Reserve Fund Study dated January 14, 2019, 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 $260.42. Based on the proposed funding plan, the average increase in contribution per unit per month will be $26.04 in fiscal year 2019/20, $28.65 in fiscal year 2020/21, and $6.30 in fiscal year 2021/22.

The proposed funding plan, recommended by Keller Engineering, will be implemented on or before March 1, 2019.

Dated this _____ day of _____, 2018.

CARLETON CONDOMINIUM CORPORATION NO. 377

_____
, Director

_____
, Director

SUMMARY OF RESERVE FUND STUDY

The following is a summary of the Class 3 - Update without Site Inspection dated January 14, 2019, prepared by Keller Engineering for Carleton Condominium Corporation No. 377 (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 2019/20 is $165,000, based on the estimated expenditures and the following:

Opening Balance of the Reserve Fund:	$ 138,463
Minimum Reserve Fund Balance during the projected period:	$ 68,517
Assumed Annual Inflation Rate for Reserve Fund Expenditures:	2.0%
Assumed Annual Interest Rate for interest earned on the Reserve Fund:	2.0%

The Reserve Fund Study can be examined by making a written request to the Board of Directors of Carleton Condominium Corporation No. 377.

CASH FLOW TABLE

Opening Balance of the Reserve Fund:	$ 138,463
Current Annual Contributions:	$ 150,000
Minimum Reserve Fund Balance (as indicated in this table):	$ 68,517
Assumed Annual Inflation Rate for Reserve Fund Expenditures:	2.0%
Assumed Annual Interest Rate for interest on the Reserve Fund:	2.0%

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
2018/19	$138,463	$150,000	$160,200	$1,065	3%	$129,328
2019/20	$129,328	$165,000	$153,408	$1,168	10.0%	$142,089
2020/21	$142,089	$181,500	$185,087	$955	10.0%	$139,457
2021/22	$139,457	$185,130	$256,069	$0	2.0%	$68,517
2022/23	$68,517	$188,833	$158,035	$98	2.0%	$99,413
2023/24	$99,413	$192,609	$54,210	$2,830	2.0%	$240,642
2024/25	$240,642	$196,461	$132,324	$4,131	2.0%	$308,910
2025/26	$308,910	$200,391	$160,012	$4,982	2.0%	$354,270
2026/27	$354,270	$204,398	$332,868	$2,472	2.0%	$228,273
2027/28	$228,273	$208,486	$194,203	$2,766	2.0%	$245,323
2028/29	$245,323	$212,656	$44,615	$6,141	2.0%	$419,504
2029/30	$419,504	$216,909	$26,235	$10,034	2.0%	$620,213
2030/31	$620,213	$221,247	$294,739	$8,722	2.0%	$555,443
2031/32	$555,443	$225,672	$202,191	$9,322	2.0%	$588,247
2032/33	$588,247	$230,186	$69,009	$12,687	2.0%	$762,110
2033/34	$762,110	$234,790	$489,358	$7,803	2.0%	$515,345
2034/35	$515,345	$239,485	$18,121	$12,339	2.0%	$749,049
2035/36	$749,049	$244,275	$82,054	$15,783	2.0%	$927,053
2036/37	$927,053	$249,161	$289,220	$15,248	2.0%	$902,242
2037/38	$902,242	$254,144	$14,568	$20,295	2.0%	$1,162,112
2038/39	$1,162,112	$259,227	$379,957	$18,235	2.0%	$1,059,618
2039/40	$1,059,618	$264,411	$595,051	$11,935	2.0%	$740,914
2040/41	$740,914	$269,699	$264,208	$12,231	2.0%	$758,636
2041/42	$758,636	$275,093	$88,622	$16,151	2.0%	$961,259
2042/43	$961,259	$280,595	$217,300	$17,685	2.0%	$1,042,240
2043/44	$1,042,240	$286,207	$68,577	$22,335	2.0%	$1,282,205
2044/45	$1,282,205	$291,931	$477,092	$19,022	2.0%	$1,116,066
2045/46	$1,116,066	$297,770	$344,450	$18,410	2.0%	$1,087,797
2046/47	$1,087,797	$303,725	$102,024	$22,753	2.0%	$1,312,251
2047/48	$1,312,251	$309,800	$192,146	$25,500	2.0%	$1,455,404

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. 377 has reviewed the Class 3 - Update without Site Inspection dated January 14, 2019 prepared by Keller Engineering for the corporation (known as the 'Reserve Fund Study') and has proposed a plan for the future funding of the reserve fund that the Board has determined will ensure that, in accordance with the regulations made under the Condominium Act, 1998, the reserve fund will be adequate for the major repair and replacement of the common elements and assests of the corporation.

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

The annual contribution recommended under the proposed funding plan for fiscal year 2019/20 is $165,000, which represents an increase of 10.0% over the amount already budgeted.

The Proposed Plan for Future Funding of the Reserve Fund can be examined by making a written request to the Board of Directors of Carleton Condominium Corporation No. 377.

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
2018/19	$150,000	3%	$0	$150,000
2019/20	$165,000	10.0%	$0	$165,000
2020/21	$181,500	10.0%	$0	$181,500
2021/22	$185,130	2.0%	$0	$185,130
2022/23	$188,833	2.0%	$0	$188,833
2023/24	$192,609	2.0%	$0	$192,609
2024/25	$196,461	2.0%	$0	$196,461
2025/26	$200,391	2.0%	$0	$200,391
2026/27	$204,398	2.0%	$0	$204,398
2027/28	$208,486	2.0%	$0	$208,486
2028/29	$212,656	2.0%	$0	$212,656
2029/30	$216,909	2.0%	$0	$216,909
2030/31	$221,247	2.0%	$0	$221,247
2031/32	$225,672	2.0%	$0	$225,672
2032/33	$230,186	2.0%	$0	$230,186
2033/34	$234,790	2.0%	$0	$234,790
2034/35	$239,485	2.0%	$0	$239,485
2035/36	$244,275	2.0%	$0	$244,275
2036/37	$249,161	2.0%	$0	$249,161
2037/38	$254,144	2.0%	$0	$254,144
2038/39	$259,227	2.0%	$0	$259,227
2039/40	$264,411	2.0%	$0	$264,411
2040/41	$269,699	2.0%	$0	$269,699
2041/42	$275,093	2.0%	$0	$275,093
2042/43	$280,595	2.0%	$0	$280,595
2043/44	$286,207	2.0%	$0	$286,207
2044/45	$291,931	2.0%	$0	$291,931
2045/46	$297,770	2.0%	$0	$297,770
2046/47	$303,725	2.0%	$0	$303,725
2047/48	$309,800	2.0%	$0	$309,800

* The term 'annual contribution' means the amount to be contributed each year to the reserve fund from the monthly common expenses

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

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

NIL