



REPORT
DEPRECIATION SERVICES

Callisto

1281 West Cordova Street, Vancouver, BC

Prepared For: The Owners, Strata Plan BSC 1073
1281 West Cordova Street
Vancouver, BC

Attention: Bob McDonald
Strata Member

Email: rgm0201@gmail.com

Date: May 17, 2024
Project Number: VR01431B

info@jrseengineering.com
604.320.1999
jrseengineering.com

PREFACE/OVERVIEW

The purpose of this Depreciation Report is to assist the owners in the asset management of their property with respect to the major building systems and components. JRS has reviewed pertinent building documents, communicated with building representatives, and performed a visual site review, all of which is summarized in this report.

The provisions of this Depreciation Report, including Reserve Planner qualifications, insurance requirements and site review and reporting methods, address all the requirements of the current Strata Property Act (Section 94) and its associated Regulation – BC Reg43/2000 (Part 6). These methods are also consistent with nation-wide standards and guidelines provided by the Real Estate Institute of Canada (REIC).

In accordance with Strata Property Regulation requirements, JRS Engineering Ltd. confirms that it and its employees, directors and affiliates are unaware of any conflicting relationship with the strata corporation. This Depreciation Report is being provided independently, with no other purpose than to provide the strata corporation with an objective report in accordance with the Engineering Services Agreement sent on October 25, 2023.

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1.0 EXECUTIVE SUMMARY

JRS Engineering Ltd. (JRS) was retained by The Owners, Strata Plan BSC 1073, to complete a Depreciation Report on Callisto, located at 1281 West Cordova Street, Vancouver, BC. The purpose of this report is to assist in allocating the anticipated reserve fund expenditures associated with the major systems and components of the building. This executive summary should be read with the rest of the report in its entirety to recognize the full context.

Based on the 30-year outlook, it would be prudent for the Strata corporation to increase its CRF contributions, as Callisto is a higher end property that will generally require specialized labor and more expensive material. It is also located in Vancouver where the cost for permitting and city services is higher. Based on our research and history of doing hundreds of Depreciation Reports, we know that Callisto's cumulative costs are significantly more than similar properties and sites. The Strata corporation's current annual CRF contribution is approximately \$137,000, which is lower than 10% of the operating budget (statutory minimum). We recommend you increase your CRF contributions per the Graduated Hybrid B model presented in Appendix D.

While JRS recommends prudent and practical increases in the Strata corporation's annual CRF contributions, we understand that ideal contribution increases may not occur. At the very least, this report should be used as supplemental information and an educational tool for current owners and potential buyers to save for possible upcoming special levies.

Over the next three years (before or on the next Depreciation Report update), the Strata council should also consider the following:

- Hire a professional to investigate the leak at the parkade potentially originating from the water fountain and complete repairs to the below grade membrane, as well as pertinent softscaping and hardscaping accordingly (Items #1, #19, #52, #53).
- Complete targeted repairs to the balcony edges and exposed eyebrow membranes as necessary (Item #4).
- Continue to replace targeted IGU replacement of window wall and curtain wall system on a periodic basis (Items #6, #7).
- Complete targeted repairs to the concrete mass wall to address isolated areas of delamination and corrosion (Item #8).
- Replace the garage door motors as necessary (Item #14).
- Complete the renewal of the paint coating and targeted sealant renewal where failed (Items #15, #16).
- Complete the renewal of the lobby, hallways, stairwells, and common area finishes, elevator cab finishes, the lounge and the meeting room including paint and flooring as necessary (Items #20, #22, #24, #47, #48).
- Replace the aging and inactive water treatment system with a more robust system (Item #26).
- Continue to replace targeted heat pumps renewals located in each unit (Item #32).

- Review and refurbish the aging make-up air units located on rooftop (Item #35).
- Hire an electrical professional to complete periodic infrared scanning of all electrical equipment and rooms (Item #41).
- Hire a professional to complete a comprehensive review of the fire alarm panel and prepare for its eventual replacement as it's nearing its typical lifespan (Item #45).
- Refurbish the emergency generator's transfer and generator switches (Item #46).
- Perform cleaning and flushing of the underground storm and sanitary drainage systems as part of routine maintenance (Item #55).

The following is a summary of the most pertinent financial values within a 30-year outlook:

Table 1 – Summary of Pertinent CRF Financial Information:

ITEM	COST
Current Replacement Costs	\$33,270,762
Future Replacement Costs	\$56,362,574
Current Reserve Fund Requirements	\$17,956,432
Future Reserve Fund Requirements	\$33,972,755
Current Annual Reserve Fund Contributions	\$137,000
Theoretical Fully Funded Annual Reserve Fund Contributions	\$1,916,769
Target Annual Reserve Fund Contributions (50%)	\$958,384

Our financial analysis includes three funding models: Baseline, Custom Graduated Hybrid A, and Graduated Hybrid B.

The Baseline model consists of current contribution levels or the statutory minimum, whichever is higher. In this case, it is the latter. This would lead to numerous special levies within the 30-year outlook.

The Custom Graduated Hybrid A model is a funding strategy which will allow the Strata corporation to gradually increase their contributions to 50% of a fully funded contribution level by 2030, then implementing inflationary increases – minimizing the frequency and amount of potential of special levies. In addition, in this model \$500,000 is allocated from the current CRF opening balance to the interior project renewal. As such, to account for the reduction in the interior project renewal, the project expenditures for the lobby component #20 has been reduced by \$500,000 for the year 2025. This model was requested by the Strata Council.

The Graduated Hybrid B model is a funding strategy that JRS recommends, which will allow the Strata corporation to gradually increase their contributions to 50% of a fully funded contribution level by 2030, then implementing inflationary increases – minimizing the frequency and amount of potential of special levies.

It is incumbent on the owners to decide what funding strategy works best for them and to tailor their own, customized financial plan. The Cash Flow Table for the recommended Graduated Hybrid B Funding model is included in Appendix D for your review.

2.0 TERMS OF REFERENCE

As the information of all Depreciation Reports is comprehensive and subjective, a draft report was issued on March 6, 2024, in order to obtain feedback and commentary on any chronological mistakes and reporting errors. We have acknowledged all comments and made all appropriate revisions that we feel prudent and technically justifiable. It is important to understand that these reports are intended to be dynamic, “work-in-progress documents”, which should be continually updated to be practical documents.

2.1 GENERAL LIMITATIONS

JRS assumes that this is not the first Depreciation Report for this property (requiring a site visit and a full compilation of asset inventory). We also assume that the building systems were built and completed with no known deficiencies in design, and that construction procedures performed were in general conformance with the documents provided by the owners and property manager unless otherwise noted.

The drawings, diagrams and photographs presented in this report are included for illustration purposes. No legal survey, soil analysis, detailed investigations, quantity survey compilations, nor exhaustive physical examinations, representative sampling or intrusive tests were performed, which would be required to discover any hidden conditions within the property.

JRS’ technical area of expertise is within the building envelope. Items such as mechanical, electrical, conveyance and site service systems have been reviewed in a general nature for the purposes of budgeting and can be reviewed in a more detailed fashion should the owners wish to do so. Accordingly, we have identified any items that require a more comprehensive review by appropriate professionals.

Replacement costs are subjective. They are based on a combination of company experience, building documents and historical construction data. It must be appreciated that reserve fund budgeting and projections are not an exact science. At best, they are prudent provisions for typical life cycle renewal costs, if and when they arise. Reserve fund requirements are subject to change and must be reviewed and revised periodically.

JRS Engineering maintains errors and omission insurance (Professional Liability Insurance) through our Certificate of Insurance, which is renewed on an annual basis.

2.2 REPORT ORGANIZATION

SECTION 1.0

This section presents an executive summary of the depreciation report.

SECTION 2.0

This section presents our terms of reference outlining general limitations of the report, how this report is organized, a general building description, all relevant building documents reviewed, and when the site visit(s) were performed.

SECTION 3.0

This section presents an introduction to the report. This includes a brief background to Depreciation Reports, the methodology used to create one, a general description of all reserve systems and components, as well as a short note on updating the report.

SECTION 4.0

This section presents a technical inventory of each building system consisting of a general description and history relating specifically to this property.

SECTION 5.0

This section presents a financial analysis of each building system consisting of historical data, life cycle renewal costs, and at least three funding models with 30-year cost projections (as required by the Strata Property Regulation). A summary and opinion of adequacy of the CRF, with considerations is also included.

SECTION 6.0

This section presents our recommendations to the owners.

SECTION 7.0

This section presents our report closure and limitations.

Included as part of this report are the following appendices:

APPENDIX A – Technical Inventory - Component Descriptions

APPENDIX B – Replacement Costs (Benchmark Analysis)

APPENDIX C – Funding Models and Cost Projections

APPENDIX D – Cash Flow Table

APPENDIX E – Glossary of Terms

APPENDIX F – CV of Key Personnel

APPENDIX G – Sub-consultant Report

2.3 BUILDING DESCRIPTION

Callisto is a 35-storey concrete high-rise building constructed in approximately 2005, with 111 residential tower suites and 15 townhouse units constructed over a two-level underground parkade. Amenities include an indoor pool and hot tub, media room, meeting room, exercise centre, and below grade parking.

The vehicular entrance of the building is located at the south elevation accessible from West Cordova Street. The entrance leads to a roundabout and centre fountain, as well as a parkade entrance shared by a neighboring strata property (Carina). Per the shared use agreement between Callisto and Carina dated June 29, 2005, the entrance driveway, ramps, garage gate and site water feature are shared between the two properties with the following percentage responsibilities: 44% to Carina and 56% to Callisto. The north elevation is bordered by the coal harbor sea walk, and the west elevation by Jervis Mews St.

Due to the proximity of Coal Harbor, the high rise is susceptible to higher-than-normal winds and wind-driven rain.

A general description and site plan of the property are summarized below:

Table 2 – Basic Property Information:

DESCRIPTION	
Construction Date	2005
Applicable Building Code	BCBC 1998
Number of Buildings	1
Number of Storeys	35
Number of Units	126
Number of Parking Stalls	408

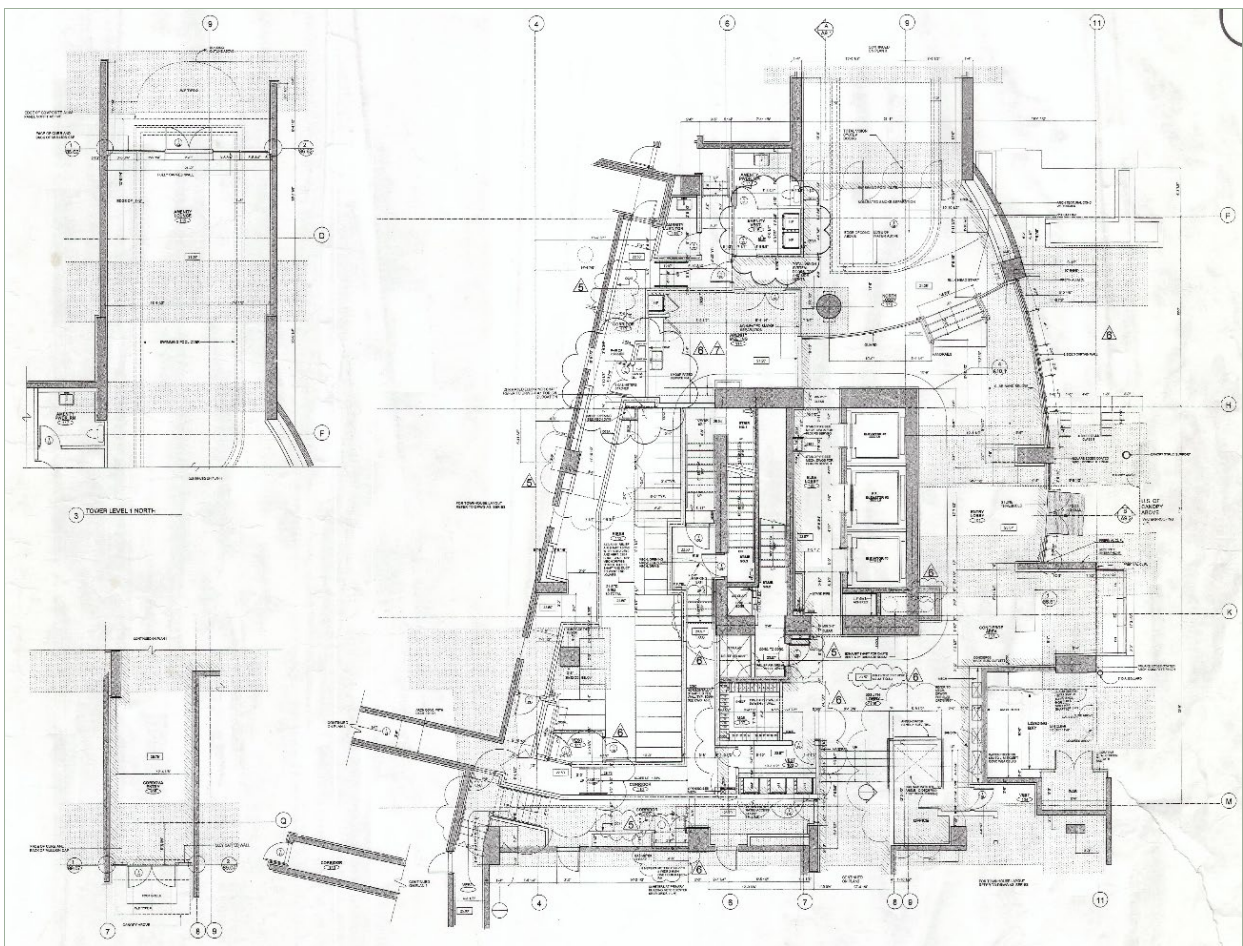


Figure 1: Site Plan of Callisto taken from Hancock, Brückner, Eng + Wright, Architectural Drawings, April 2002

2.4 DOCUMENTS REVIEWED

JRS was the building envelope consultant during the original construction of the building and has the documents and drawings stored on our server from the original construction.

The following documents were provided for our review as resources for this Depreciation Report:

PLANS/DRAWINGS AND TECHNICAL DOCUMENTS

- Architectural (Record Set) – Hancock, Brückner, Eng + Wright; April 2002
- Plumbing (Record Set) – Sterling Cooper & Associates; January 2002
- Mechanical (Record Set) – Sterling Cooper & Associates; January 2002
- Electrical (Record Set) – Arnold Nemetz and Associates; January 2002
- Ornamental Metal (Record Set) – Alum Craft Ltd; June 2003
- Glazing – Prestige Glass Ltd; February 2003
- Landscape – Phillips Farevaag Smallenerg; February 2002
- Miscellaneous permits and inspections (backflow, boiler, electrical, elevator, fire, heat pumps, outdoor whirlpool, pool, roof anchors)
- Miscellaneous engineering reports (building envelope, elevator, post tensioning)

NON-TECHNICAL AND FINANCIAL DOCUMENTS

- AGM and SGM Minutes from 2021, 2022, and 2023
- Operating Budget and Financial Statements for 2021, 2022, and 2023
- Miscellaneous maintenance contracts and invoices (driveway tile, elevators, enterphone, EV charging, fitness equipment, landscape, parkade door motor, parkade sensors, plumbing, and drains).
- Strata Plan and Bylaws
- Renovation Committee documents, 2023
- Certificate of Insurance for 2023/2024

In addition, we interviewed Bob McDonald and Dave Dick (members of Callisto's Engineering Committee) and communicated with Casper Chan (Strata Manager) as supplementation to the building history and supporting documents.

2.5 SITE VISITS

Jaspreet Singh Minhas, B.A.Sc., EIT, Jeffrey Leung, B.Sc., EIT and Wesley Narciso, M.Eng., P.Eng., FEC, CRP, PRA of JRS visited Callisto on December 7, 2023. JRS completed three below grade exploratory excavations to review the membrane's condition. In addition, we removed pavers at two different unit decks to review the condition of the membrane below the pavers. Remdal assisted with this work.

Access to multiple units in conjunction with the parkade, flat roof and service rooms was provided by Bob McDonald. The weather was partly cloudy, and the temperature was 7°C.

Rope drops to assess the condition of the exterior of the building were completed by Remdal on January 25th, 2024.

Jeff Besant from Beasant & Associates Engineers Ltd. attended site to review the mechanical, electrical, elevator and life safety equipment on December 15, 2023, and on February 15, 2024, to review the plumbing system. Jeff's piping review included sampling and a visual review of corrosion damage, testing for Cu⁺ and pH levels in the water, and a comprehensive assessment detailed in a separate piping report.

3.0 INTRODUCTION

3.1 BACKGROUND

The terms *Contingency Reserve Fund Study* and *Depreciation Report* have been used interchangeably. The former is typically used across Canada and the latter is the terminology used in the Strata Property Act of BC. Therefore, *Depreciation Report* will be used for reporting purposes. It should be noted that a Depreciation Report is not a technical report, but more of a financial report that contains technical descriptions and predictions intended to assist the owners with the prudent fiscal management of their CRF.

A Depreciation Report is a financial plan that consists of the identification, description, quantification, and analysis of reserve components, and then provides cost estimate and life cycle analysis, projecting future repair or replacement costs and estimating the necessary reserve fund requirements. It also takes into consideration inflationary trends, interest assumptions, and appropriate funding models.

Depreciation Reports are a basis for prudent financial planning for capital expenditures, intended to assist owners and property managers with informed decision making on CRF matters such as investment, management, and budgeting. In essence, it provides a guide for the owners to save sufficient funds to cover the costs of future repairs and replacements of major building systems and components, as well as to help ensure that current and future owners are assessed for CRF contributions fairly and equitably.

3.2 METHODOLOGY

There are generally four main components in the Depreciation Report production process:

1. Background Review

JRS reviews the pertinent technical, financial, and legal records related to the building for the purposes of writing a Depreciation Report. We also communicate with building representatives in order to confirm CRF financial information, previous capital expenditures, system replacements, maintenance strategies, and upcoming renewals. This gives us a deeper understanding of the financial situation, building maintenance and the overall context of the asset management history.

2. Site Visit

JRS visits the property to visually review all the major building systems and components, which can include making notes and sketches, as well as taking site measurements and photographs. Intrusive/destructive investigation or inspection by specialized professionals does not typically take place, as Depreciation Reports are meant to provide a general overview of component conditions.

3. Technical Inventory

JRS compiles an inventory of items that summarizes descriptions of all the major systems and components into a practical list of reserve items. To keep the list simple and easy to use, in some cases we have grouped together items that have minor renewal costs as well as similar maintenance and replacement dates. For example, roof components such as insulation, rock ballast, vents, and eave flashings are not reserved separately; instead, they are grouped together, as they will likely be replaced at the same time. Replacement dates are estimated based on typical service life and effective ages.

4. Financial Analysis

JRS' financial analysis is consistent with those outlined and recommended by the REIC. It uses the Cash Flow Funding method, which presents estimated current and future replacement costs for the CRF as a whole, as well as an accumulated CRF balance, using assumed inflation and interest rates. Units and dimensions are taken either directly from site, drawings, archived data on various governmental websites, or a combination of all of these sources. We provide at least three funding models to assist the owners with their CRF contribution strategy. Unit rates and allowances are based on similar completed projects, contractor quotes and other costing manuals/data.

3.3 UPDATING

Per the Strata Property Regulation - Part 6.2(7)(a), unless a 3/4 exemption vote is passed, Strata corporations require a new or updated Depreciation Report every 3 years.

Furthermore, it is important that the Strata council review the Depreciation Report annually to confirm accumulated CRF balance and contributions, document all expenditures and ensure that deterioration of certain building systems/components has not accelerated.

Continually updating your Depreciation Report will not only mitigate insufficient reserve funds for major repairs/renewals, but it will also enhance the value and durability of the property.

4.0 TECHNICAL INVENTORY

The technical inventory and reserve component descriptions below are property specific and based on building documents, visual review and communication with building representatives.

This technical inventory is categorized in the Uniformat sections listed below and summarized in component description boxes consisting of location, installation date, typical service life, effective age, remaining service life, planned renewal date, general description, and condition as well as short term action. These reserve component description boxes are located in Appendix A. These generally provide information on what is included in the cost estimation of the physical assets.

An overall general description and system history are presented for each of the major building systems below.

4.1 BUILDING ENVELOPE AND STRUCTURE

Major building envelope components consist of inverted roof assemblies, spandrel panels, concrete mass wall, window wall systems, curtain wall assemblies, sliding and swing doors, cantilevered concrete balconies, as well as associated membranes, metal flashings, and sealant. Also included in this section are the above-grade parking garage and all levels of the below grade parking garage.

The building roofs are protected by inverted roof assemblies which consist of 2-ply torch applied styrene-butadiene-styrene (SBS) membrane. The lower residential roofs and roof decks are protected by a membrane and covered with concrete pavers.

The wall assemblies of the building are constructed as rainscreen systems and consist primarily of window walls with vision glazing and spandrel panels with colour glazing.

These assemblies are a combination of insulated glazing units (IGU) set within the frames. Isolated sections of each building include concrete mass wall. This system utilizes a small drainage cavity between the cladding and underlying waterproofing membrane.

An aluminum framed window wall system makes up the majority of the windows at each building. Isolated sections of each building include a curtain wall assembly and are similar to a window wall system, however, curtain wall assemblies typically consist of a more robust structural system as it can span multiple floors. The IGUs consist primarily of vision glazing and coloured spandrel panels.

The concrete balcony slabs and eyebrows are protected by liquid applied waterproofing membrane, which likely consists of polyurethane. The balcony membranes are primarily covered with tiles. Aluminum railings with glass inserts are installed along the perimeter of the balconies.

The parking garage consists of two levels below grade. Sections of the suspended slabs in the parkade are covered with a vehicular traffic waterproofing membrane, which likely consists of polyurethane membrane.

Sealant and paint renewals are subjective and can vary from property to property. As a standard approach, we typically recommend significant sealant renewal and painting projects to occur concurrently within 7-to-10-year cycles. However, sections of sealant should be replaced upon failure (e.g., cracks, crazing, debonding, etc.), especially in critical locations. Some properties may have to perform annual maintenance or pursue a targeted sealant renewals program more frequently (every 2 to 5 years) than shown in our cost projections.

4.2 INTERIOR

The lobby interior finishes include granite floor tiles, wood wall panels, and painted drywall ceilings. The lobby also includes a water fountain feature. The hallway and common area finishes include painted walls and ceilings with carpet floors.

4.3 CONVEYANCE

The conveyance systems on this property include three traction elevators in each building manufactured by TKE Northern Elevator.

The elevators were installed during the original construction. We understand that routine inspections and maintenance have been performed on the elevators by TKE.

For a more detailed review and estimate of the conveyance systems, especially nearing the end of the service life, an elevator consultant should be engaged.

Recent changes to Provincial regulations adopted the most current version of the CSA B44-2007 *Safety Code for Elevators and Escalators*, which requires modification of existing single bottom cylinder elevators by October 8, 2015. Safety Order SO-L1 101214 1 was issued to all building owners, property managers and BCSA licensed elevating devices contractors and is intended to promote the orderly and efficient compliance of owners and contractors with the Code requirements (Safety Authority Information Bulletin No. B-L4 101214 1). To ensure that the elevator systems are safe and compliant with this bulletin, an elevator consultant should be engaged.

4.4 MECHANICAL

The mechanical systems for the buildings generally consist of heating, ventilation, and air conditioning (e.g., make-up air units, parkade exhaust fans, heat pumps, and carbon monoxide detectors), plumbing (i.e., water pipe distribution, boilers, sump pumps, and hot water tanks), fire protection components, and an industrial-sized garbage compactor. The smaller exhaust fans found in utility and storage rooms are not included in this report.

According to the information provided, the mechanical systems at Callisto are routinely maintained by Honeywell. Renewal costs associated with the mechanical systems have been provided by Besant Associates and Engineers Ltd. and are included in this report.

The fire life safety equipment is maintained by Fire Pro Protection.

Costs to renew domestic water piping should be viewed with caution. Numerous factors such as hazardous materials (e.g., asbestos in the drywall), BC Building Code changes, material costs/upgrades as well as complicated plumbing designs and high-end interior furnishings can significantly affect the estimated cost of this asset. It should also be noted that while pipe replacement is common, there are other types of options available to the owners (e.g., internal coatings, altering water chemistry). JRS does not officially endorse any particular approach, as every property consists of varying factors that need to be considered (e.g., age of pipes, location of building, type of material, thickness of pipe, frequency of failures, type of failures). Regardless, we would be happy to discuss either of these options and provide general direction as needed.

Property wide renewals on sprinkler heads, standpipes, cabinet hoses are not typically included in these reports (as recommended by the REIC) due to the unpredictability of hidden conditions, soft costs and BC Fire Code changes/updates. Any safety deficiencies would also be caught during periodic inspections and corrected accordingly. Furthermore, complete and comprehensive fire detection system replacement has not been included in this report as this varies widely with different brands, models and parts and some manufacturers discontinue production of certain parts that support the current system. As the fire panels/detection systems become obsolete, a certified fire protection professional should be engaged to assess the system and make more detailed recommendations.

4.5 ELECTRICAL

The electrical reserve components include electrical distribution devices (i.e. incoming services, transformers, various distribution panels, wiring etc.), emergency generator, access control, security, fire panels and emergency lighting.

The electrical section of any Depreciation Report should be viewed with caution. Many electrical systems and components generally serve the life of the building without having to be replaced (e.g., electrical panels, transformers, incoming underground service lines, etc.). Renewal dates are difficult to predict, depending on use, maintenance, and review. Major electrical system renewals are rare but can be expensive. Furthermore, it is not always clear whose responsibility certain electrical items belong to (e.g., distribution transformer, electrical wiring).

Electrical room/vault maintenance and review should be performed on a periodic basis. As a point of reference, infrared review and dust/debris removal should be performed every 3 years on high rise buildings in Vancouver - this is specifically required for "dual radial" vaults.

4.6 SPECIALTY

The pumps and sand filters for the pool room are included in this report. Mechanical equipment for the water features (i.e. water pumps, sand filters, etc.) and pond are included in this report. A meeting room, multimedia room, lounge and fitness room are also located in the building. A pool, hot tub, and steam room are located in the building as well.

4.7 SITE SERVICES

The site services include hardscaping, walkways, patios, site services (utilities lines), exterior lighting, water feature, irrigation, and landscaping.

5.0 FINANCIAL ANALYSIS

5.1 RESERVE FUND: HISTORICAL DATA

Based on the documents reviewed (past three years) and our communications with building representatives, we have summarized pertinent CRF transactions and balances in the table below:

Table 3 – CRF Historical Information:

DESCRIPTION	2021	2022	2023
ANNUAL OPERATING BUDGET	\$1,444,588	\$1,585,831	\$2,054,000
CRF BALANCE	\$1798,844	\$2,124,757	\$1,937,241
Approved CRF contributions	\$285,000	\$137,677	\$137,000
Past interest accrued on CRF	\$14,072	-	-

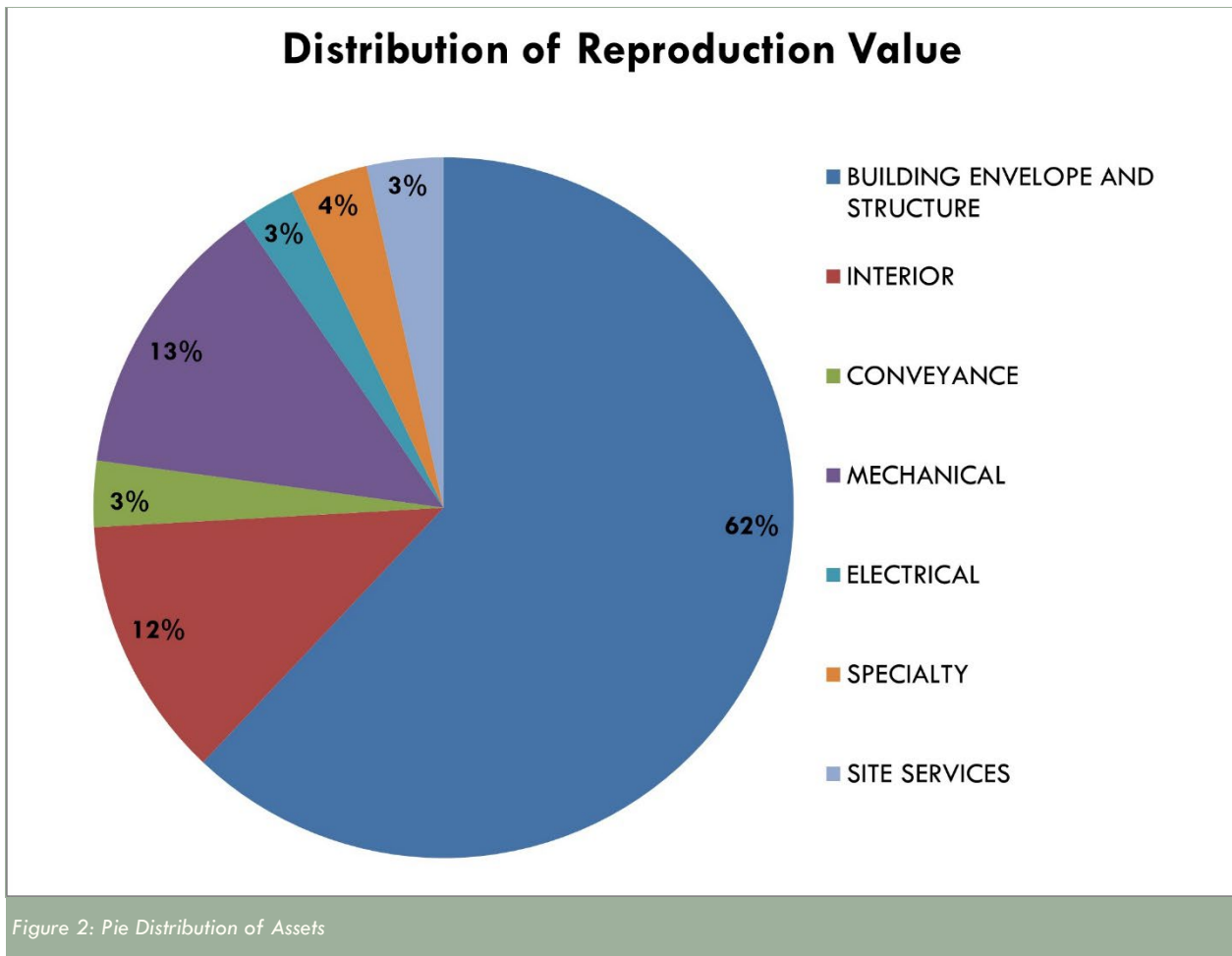
5.2 RESERVE FUND: LIFE CYCLE RENEWAL COSTS

The Life Cycle Renewal Cost table (Benchmark Analysis), included in Appendix B, is a tabulated summary of expected renewal years, costs and reserve fund parameters. Per the visual condition assessment of all the major building systems and components, future replacement dates are predicted (assuming reasonable and ongoing maintenance). This assumes that ongoing and reasonable maintenance is being performed unless otherwise noted or reported by property representatives. Based on these dates, as well as the assumed interest and inflation rates, the current and future CRF requirements are determined and allocated.

The order-of-magnitude renewal costs are developed based on general designs, makes and models, as well as estimated areas, assumed quantities and unit rates. While these costs may not be required on the specified dates, some or all of these allowances can be spent before or after these dates as needed. This is especially true for aggregate subjective assets like electrical, landscaping, and miscellaneous mechanical equipment.

These costs may not consist of all contractor mobilization and front-end costs, overhead and profit, as well as a detailed schedule of values, which would require the review of drawings, details, specifications, and material schedules. Contingencies, consulting, project management and general contractor fees have also not been included. JRS does not guarantee the accuracy of these costs and shall incur no liability where actual construction costs are exceeded.

The following pie chart illustrates the percentage that each of the major building systems represent relative to each other. The entire pie represents the reproduction value of the building reserve components, and the wedges refer to the respective building systems, based on the “Reserve Fund Assessment Allocation” column in the benchmark analysis of Appendix B.



It should also be noted that a *Power Smart Product Incentive Program* exists with BC Hydro. The program is intended to provide incentives for simple retrofits with energy efficient products to certain BC Hydro business customers. Refer to the *BC Hydro Product Acceptance Criteria* catalogue to determine acceptable technical and product requirements (i.e., lighting, HVAC, and refrigeration) for the shared common assets of your property in order to potentially offset required renewal costs.

5.3 RESERVE FUND: 30-YEAR COST PROJECTION

The Cost Projection Sheets located in Appendix C consist of the estimated replacement costs of all the reserve fund components at anticipated renewal dates for the next 30 years (per the Strata Property Regulation).

It should be noted that JRS does not purport that the actions/expenditures at the listed renewal dates must or will occur, but that we recommend the Strata corporation strive to have sufficient funds for these actions/renewals that should or are highly likely to take place at or around these dates.

INTEREST RATE

Although the Regulation requires a reserve fund plan to be projected over 30 years, the interest rate is weighted more towards recent and short-term economic conditions because of their volatility over time. This is the rate of return applied to your CRF investment. We have assumed an annual interest rate of **1.5%**, taken from historical bank data. This should be revised in the next Depreciation Report update. Significant consideration should be made towards an investment strategy that allows all or some of your CRF funds to grow at higher rates of return. Refer to Part 6.11 in the Strata Property Regulation to confirm what types of investment vehicles are permitted.

INFLATION RATE

This is the growth rate applied to all future renewal costs. A common fallacy is that this rate should be tied to the CPI (Consumer Price Index). The CPI is based on a fixed basket of commodities - consumer goods and services such as milk and eggs, which are largely unrelated to construction costs. Since this fixed basket contains goods and services of unchanging or equivalent quantity and quality, the CPI reflects only price fluctuations and excludes labour costs, which is a significant portion of remediation/renewal projects. The CPI includes approximately 600 commodities categorized in 168 basic commodity classes, which is simply too broad to use for future construction/renewal cost estimating. Furthermore, volatile items such as oil and gas are also excluded from CPI, which can greatly affect construction costs.

We have derived an inflation rate from changes in actual construction price indices obtained from Statistics Canada relating to all trades in the Vancouver-area construction market. The estimated inflation rate takes into consideration construction indices going back to 1981 (as far back as Statistics Canada has records).

The inflation rate used in this Depreciation Report is **3.0%**. Although this is somewhat similar to the current CPI, a distinction in the process of reaching this value must be understood.

Interest and inflation rates are significant factors when projecting future replacement costs and CRF requirements. Slight variations in either parameter can have dramatic effects on future values, including the annual CRF contributions or any special levies, which are usually the most relevant concerns for the majority of owners.

5.4 FUNDING MODELS

To assist the owners with funding strategies, the Strata Property Regulation (Part 6.2.4) requires that at least 3 funding models be provided. Essentially, these are possible funding strategies for the owners to contribute to their CRF. Our funding models are “cash flow” and “cash funded” to allow pragmatic and user-friendly recommendations.

It is important to note that there are many possibly funding strategies that a Reserve Planner can recommend. JRS has included the following three different cash flow funding models, which essentially consists of a low end, high end and a combination of the two:

BASELINE

This model maintains the status quo (how the CRF is currently being funded) or the statutory minimum (10% of operating budget), whichever is higher. Annual increases are only governed by inflation and therefore future loans or special levies are likely to occur. This is the most “hands off” funding strategy, consisting of a more reactive approach.

CUSTOM GRADUATED HYBRID A

This model is starting at current contribution levels and ramping up to a 50% fully funded contribution level. Special levies may still occur but at smaller and less frequent amounts. As per the request of the strata council, this model also allocates \$500,000 from the current CRF opening balance to the interior project expenditures as requested by the Strata Council. As such, to account for the reduction in the interior project renewal, the project expenditures for the lobby component #20 has been reduced by \$500,000 for the year 2025.

GRADUATED HYBRID B

This model is starting at current contribution levels and ramping up to a 50% fully funded contribution level. Special levies may still occur but at smaller and less frequent amounts. This funding strategy allows a more targeted funding plan, allowing for a more balanced and pro-active approach.

It is widely accepted that Strata fees in BC are generally low and that most CRFs are under-funded. This is likely the driving force for Depreciation Report legislation, which has been mandated in many other provinces some time ago. Therefore, your Baseline model, as well as the statutory minimum, is not sufficient in most cases. The Fully Funded model is ideal, but impractical for most Strata corporations—at least when trying to attain a fully funded level within a short period of time. Achieving at least a 50% fully funded CRF contribution level as soon as practical should be the goal of every Strata corporation. History in other provinces and with Strata corporations who have already updated their Depreciation Reports have shown that this is feasible.

JRS has provided a Graduated Hybrid B funding model that we believe is achievable and pragmatic. These models allow the owners to ramp up towards a 50% fully funded CRF contribution level within six years.

The Baseline, Custom Graduated Hybrid A and Graduated Hybrid B funding models are presented in Appendix C. A graph is included with each funding model cost projection sheet to summarize and visually aid the reader in comprehending the CRF contributions, balance, and requirements. The varying input parameter in each funding model is the annual contribution amount to the CRF.

5.5 SUMMARY OF RESULTS AND ADEQUACY OF RESERVE FUND

The Baseline models indicates a high frequency of special levies of approximately 15 levies totaling \$65M in the next 30 years.

With the Custom Graduated Hybrid A and Graduated Hybrid B there are eight special levies totaling an estimated amount of \$46.2M. In these models, the annual contributions allow the owners to achieve 50% of the annual fully funded contribution levels by gradually increasing their annual CRF to be a little more aggressive until 2030. This includes an initial increase of 45% to the CRF in 2024 (to meet statutory requirements), 30% in 2025, and approximately 20% from 2026 to 2030, and then finally reduced to 3% to account for inflationary increases.

It is essential to remember that our financial models and recommended funding strategies are for the Strata corporation's contributions to their CRF, not Strata fees. CRF contributions are only a fraction of the overall budget, which is funded almost entirely by the Strata fees. For example, if an owner is paying \$600/month in Strata fees and 10% of their Strata fees go to the CRF, a recommended CRF contribution increase of 50% a year, results in an extra \$30 a month. Moreover, increasing CRF contributions does not need to be entirely borne out of raising Strata fees. Other methods of offsetting increased Strata fees include cutting costs and increasing revenue generating activities (e.g., laundry services, vending machines, etc.).

It is important to note that this Depreciation Report, nor should any Depreciation Report, purport to be used verbatim or used to pressure the Strata corporation into mandating higher CRF contributions or Strata fees. Our financial analysis and funding strategies are meant to simply provide information and encourage a balanced approach in saving for eventual renewals that may occur at or around the time stated in the funding models, which should be continually reviewed and updated. Therefore, this report should not be perceived as having to spend exactly the amounts at the specified times. It should be used as guidance for the Strata council to manage its CRF and create its own detailed, customized financial plan.

Each model safeguards against negative CRF balances. However, it is incumbent on the owners to ensure that at least the statutory minimum outlined in Part 6.1 of the Strata Property Regulation are maintained, which is widely known to be a bare minimum that almost never achieves a reasonably long term funded CRF.

5.6 CONSIDERATIONS

It is often practical and economical to undertake the repair or replacement of property assets at the same time or immediately consecutive to one another. Although resulting in higher immediate capital costs, there will be potentially less disturbance to unit occupants than performing work at separate times, which may be a significant consideration. The owners should evaluate the relative weight they ascribe to some of the issues noted above prior to undertaking any major capital expenditures or updating the Depreciation Report, so that this information can be incorporated accordingly.

The intent of this Depreciation Report is to mitigate unfair levels of contribution and encourage the Strata corporation as a whole or as individuals to save for eventual renewals/replacements to the property, starting at the soonest applicable fiscal year.

Costs and input data should also be reviewed and updated regularly to ensure a higher level of accuracy. Review of the financial parameters should be performed by the Strata council annually and through

Depreciation Report updates, which include site visits by a Reserve Planner every 3 years, per the Strata Property Regulation.

6.0 RECOMMENDATIONS

JRS recommends the Strata council implement the Graduated Hybrid model B or something similar to eventually reach a 50% fully funded contribution level to the CRF by 2030 or sooner. The Strata council should compare it with the other funding strategies, tailor it to the ownership demographics and decide which would be the most appropriate and acceptable for the general ownership to include in the annual budget.

Over the next three years (before or on the next Depreciation Report update), the Strata council should also consider the following:

- Hire a professional to investigate the leak at the parkade potentially originating from the water fountain and complete repairs to the below grade membrane, as well as pertinent softscaping and hardscaping accordingly (Items #1, #19, #52, #53).
- Complete targeted repairs to the balcony edges and exposed eyebrow membranes as necessary (Item #4).
- Continue to replace targeted IGU replacement of window wall and curtain wall system on a periodic basis (Items #6, #7).
- Complete targeted repairs to the concrete mass wall to address isolated areas of delamination and corrosion (Item #8).
- Replace the garage door motors as necessary (Item #14).
- Complete the renewal of the paint coating and targeted sealant renewal where failed (Items #15, #16).
- Complete the renewal of the lobby, hallways, stairwells, and common area finishes, elevator cab finishes, the lounge and the meeting room including paint and flooring as necessary (Items #20, #22, #24, #47, #48).
- Replace the aging and inactive water treatment system with a more robust system (Item #26).
- Continue to replace targeted heat pumps renewals located in each unit (Item #32).
- Review and refurbish the aging make-up air units located on rooftop (Item #35).
- Hire an electrical professional to complete periodic infrared scanning of all electrical equipment and rooms (Item #41).
- Hire a professional to complete a comprehensive review of the fire alarm panel and prepare for its eventual replacement as it's nearing its typical lifespan (Item #45).
- Refurbish the emergency generator's transfer and generator switches (Item #46).
- Perform cleaning and flushing of the underground storm and sanitary drainage systems as part of routine maintenance (Item #55).

JRS further submits the following general recommendations:

- Perform more detailed, intrusive investigations targeting the higher expense systems (e.g., building envelope, piping, etc.) in order to fine tune the service life predictions and replacement costs.
- Prior to any major renewals, the Strata council should hire a consultant to prepare drawings and specifications and tender out the work to multiple contractors before raising funds or requesting any special levies.
- Major repairs and replacements should be recorded in, and funded from, a separate contingency reserve fund account. Keep in mind that multiple “sub-CRF-accounts” for specific assets (e.g., roofing, windows, piping, etc.) are not required and should be used with caution.
- The Strata council should create a committee or appoint a Strata council member to oversee the overall management and documentation of the CRF.
- The CRF should be invested with a strategy that will allow for multiple transactions and achieve a higher rate of return than the current interest rate.

7.0 CLOSURE

This report was prepared by JRS for The Owners, Strata Plan BSC 1073. Any use that a third party makes of this report, or any reliance or decisions made based on it, are the sole responsibility of such third parties.

The findings herein are based on a visual review of surface conditions. Deficiencies that may exist, but were not recorded in this report, were not apparent given the level of study undertaken.

This assessment is in part based on information provided by others. Unless specifically noted, we have assumed this information to be correct and have relied upon it in reaching our conclusions and recommendations.

Component conditions and renewal costs identified are for the purpose of general financial planning. This report is not intended to substitute the need for in-depth condition assessment of components by professionals using testing and other means.

The replacement costs in this report apply only within the confines and objectives of this review. The costs herein must not be used in conjunction with any other appraisal or Depreciation Report and may be invalid if so used.

The Strata corporation may use this report in deliberations affecting the subject property only, and in so doing, the report must not be abstracted; it must be used in its entirety.

The material in this report reflects the best judgement of JRS in light of the information available at the time of preparation.

Please contact the undersigned if you should require any additional information.

Prepared by:

JRS ENGINEERING
EGBC Permit to Practice #1002484

Per:



Jaspreet Singh Minhas, B.A.Sc, EIT
Engineer, Building Science

Reviewed by:



Wesley Narciso, M.Eng., P.Eng., FEC, CRP, PRA
Principal, Building Science
Division Manager




APPENDIX A


TECHNICAL INVENTORY – COMPONENT DESCRIPTIONS

BUILDING ENVELOPE AND STRUCTURE

1 PARKADE	
BUILDING ENVELOPE AND STRUCTURE	Location: Below Grade
	Year Installed: 2005
	Typical Service Life (years): 50
	Effective Age (years): 18
	Remaining Service Life (years): 32
	Planned Renewal Date: 2055
<p>Description: This component includes the suspended concrete slab beneath landscaping, water fountain, concrete slab on grade, and the below grade concrete walls at the parkade.</p> <p>Condition: This asset appears to be in reasonable condition. Efflorescence was noted throughout the parkade. No active leaks were noted during the site visit; however, signs of possible past leaks and repairs were noted. JRS understands that local repairs and injections were completed under the fountain approximately 5 years ago. JRS completed three exploratory openings and did not find signs of water ingress or issues with the below grade membrane. JRS understands that a leak was reported earlier this year, and an inspection is ongoing.</p> <p>Comments: During the site visit, it was noted that there are a few locations with staining and efflorescence. JRS recommends cleaning the staining and efflorescence and monitoring if it appears again. An allowance for future repairs related to the recent leak under the fountain is included. The structural capacity of the foundation walls and slabs is expected to last the life of the building. The 50-year service life is an estimate as to when the owners can expect concrete repairs, typically related to delamination, water intrusion and wear.</p>	



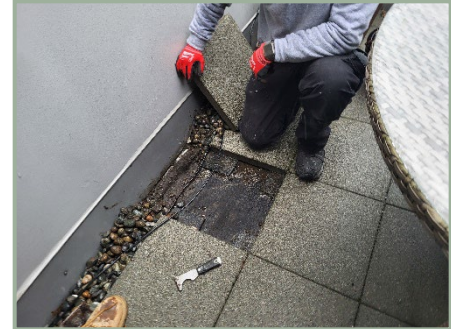
2 PARKADE TRAFFIC MEMBRANE			
BUILDING ENVELOPE AND STRUCTURE	Location:	Parkade	
	Year Installed:	2005	
	Typical Service Life (years):	15	
	Effective Age (years):	8	
	Remaining Service Life (years):	7	
	Planned Renewal Date:	2030	
	<p>Description: This component likely consists of a 2-coat polyurethane waterproofing membrane installed on sections of the above-grade parkade.</p> <p>Condition: The parkade traffic membrane is in overall satisfactory condition. JRS understands that the membrane was recoated in 2010 and repaired in 2015.</p> <p>Comments: Reserve costs include allowances for a comprehensive review prior to the larger-scale renewal after 15 to 20 years of service.</p>		


3 BALCONY GUARDRAILS			
BUILDING ENVELOPE AND STRUCTURE	Location:	Balconies and Roof Decks	
	Year Installed:	2005	
	Typical Service Life (years):	40	
	Effective Age (years):	14	
	Remaining Service Life (years):	26	
	Planned Renewal Date:	2049	
	<p>Description: The balcony and roof deck guardrail assemblies consist of aluminum railings with glass panels.</p> <p>Condition: The balcony guardrail assemblies are in satisfactory condition with no major deficiencies observed or reported.</p> <p>Comments: The reserve cost of this component includes the full renewal of the balcony guardrails. The balcony guardrail assemblies can be replaced in conjunction with the balcony waterproofing membranes. Although, this can be based on condition, aesthetics and other design considerations.</p>		


4 BALCONY MEMBRANE ASSEMBLIES	
BUILDING ENVELOPE AND STRUCTURE	Location: Balconies
	Year Installed: 2005
	Typical Service Life (years): 20
	Effective Age (years): 13
	Remaining Service Life (years): 7
	Planned Renewal Date: 2030
	<p>Description: The balcony membrane assemblies include liquid applied waterproofing membranes below the tiles.</p> <p>Condition: The balcony membrane assemblies are in overall satisfactory condition. No issues with the membrane were reported during the site visit. JRS was not able to review the membrane below the tiles, however the exposed membrane appeared to be in fair condition with some signs of aging from the rope drops conducted. JRS understands that the eyebrows and balcony edges have been repaired previously in 2015-2017.</p> <p>Comments: The balcony membrane assemblies should be replaced in conjunction with the balcony guardrail assemblies. Reserve costs include the full replacement of the balcony waterproofing membranes. An allowance for a review of the balconies and repair of the exposed eyebrows has been included prior to the planned renewal.</p>





5 DECK MEMBRANE ASSEMBLIES	
BUILDING ENVELOPE AND STRUCTURE	Location: Roof Decks
	Year Installed: 2005
	Typical Service Life (years): 30
	Effective Age (years): 18
	Remaining Service Life (years): 12
	Planned Renewal Date: 2035
	<p>Description: The roof decks consist of an inverted roof system with a 2-ply SBS membrane covered in drainage board, insulation, filter fabric and concrete pavers.</p> <p>Condition: During the site visit, JRS conducted two openings to assess the condition of the waterproofing membrane. The roof deck membranes appear to be in reasonable condition with no signs of water ingress or issues observed or reported during the site visit.</p> <p>Comments: Reserve costs include full renewal of the roof deck membranes. An allowance for a review of the has been included prior to the planned renewal.</p>





6 WINDOW WALL			
BUILDING ENVELOPE AND STRUCTURE	Location:	Building Exterior	
	Year Installed:	2005	
	Typical Service Life (years):	40	
	Effective Age (years):	18	
	Remaining Service Life (years):	22	
	Planned Renewal Date:	2045	
	<p>Description: The primary exterior cladding of the high-rise buildings consists of window wall assemblies. The windows are aluminum framed with double-pane IGUs (Insulated Glazing Units).</p> <p>Condition: The window wall assemblies are in overall satisfactory condition. JRS understands that IGUs are being replaced on a periodic basis.</p> <p>Comments: An allowance has been included every 2-3 years to replace targeted IGUs and approximately every 10 years for targeted fishtanking repairs. The repairs have been planned to correspond with the planned painting and targeted sealant renewal projects to reduce mobilization costs. The Building Envelope Condition Assessment should include a review of the window wall assemblies, curtain wall assemblies, stone tile, and masonry veneer cladding.</p>		


7 CURTAIN WALL			
BUILDING ENVELOPE AND STRUCTURE	Location:	Building Exterior	
	Year Installed:	2005	
	Typical Service Life (years):	40	
	Effective Age (years):	18	
	Remaining Service Life (years):	22	
	Planned Renewal Date:	2045	
	<p>Description: The curtain wall assemblies are installed on the exterior of targeted sections of the building. The curtain walls are aluminum framed with double-paned IGUs.</p> <p>Condition: The curtain wall assemblies are in satisfactory condition with no major deficiencies observed or reported. JRS understands that past targeted repairs were completed in the last decade.</p> <p>Comments: Allowances have been included every 2-3 years for targeted replacement of IGUs as required alongside the window wall allowance, and approximately every 10 years for targeted fishtanking repairs. The reserve cost of this component includes full renewal of the component at the end of its typical lifespan.</p>		


8 EXTERIOR WALLS - CONCRETE			
BUILDING ENVELOPE AND STRUCTURE	Location:	Building Exterior	
	Year Installed:	2005	
	Typical Service Life (years):	40	
	Effective Age (years):	18	
	Remaining Service Life (years):	22	
	Planned Renewal Date:	2045	
	<p>Description: This component includes concrete walls with elastomeric coating found on sections of the exterior walls.</p> <p>Condition: The concrete cladding is generally in fair condition with targeted sections of delamination and corrosion staining observed from the rope drops conducted. JRS understands that local repairs were completed in 2015-2017.</p> <p>Comments: Allowances have been included for targeted repair or replacement, including an estimated design package fee of the concrete delamination and corrosion, a periodic targeted repair allowance, and a building envelope condition assessment. Reserve costs are scheduled after 40 years of service life when targeted renewal and face sealing will generally be required.</p>		

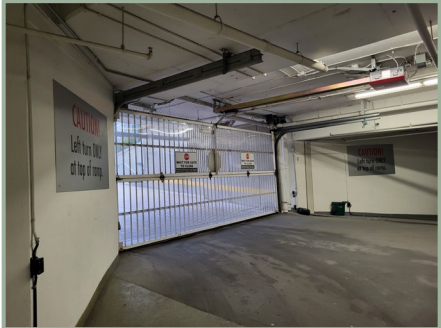
9 SLIDING DOORS														
BUILDING ENVELOPE AND STRUCTURE	<table border="0"> <tr> <td>Location:</td> <td>Balconies and Roof Decks</td> </tr> <tr> <td>Year Installed:</td> <td>2005</td> </tr> <tr> <td>Typical Service Life (years):</td> <td>40</td> </tr> <tr> <td>Effective Age (years):</td> <td>18</td> </tr> <tr> <td>Remaining Service Life (years):</td> <td>22</td> </tr> <tr> <td>Planned Renewal Date:</td> <td>2045</td> </tr> </table>	Location:	Balconies and Roof Decks	Year Installed:	2005	Typical Service Life (years):	40	Effective Age (years):	18	Remaining Service Life (years):	22	Planned Renewal Date:	2045	
	Location:	Balconies and Roof Decks												
	Year Installed:	2005												
	Typical Service Life (years):	40												
	Effective Age (years):	18												
	Remaining Service Life (years):	22												
	Planned Renewal Date:	2045												
<p>Description: The aluminum framed sliding doors are installed at the balconies and roof decks.</p>														
<p>Condition: The sliding doors are in satisfactory condition with no major deficiencies observed or reported. JRS understands that resealing of targeted sliding doors was completed in 2015-2017.</p>														
<p>Comments: Reserve costs for this component include the replacement of the sliding doors.</p>														


10 SWING DOORS														
BUILDING ENVELOPE AND STRUCTURE	<table border="0"> <tr> <td>Location:</td> <td>Balconies and Roof Decks</td> </tr> <tr> <td>Year Installed:</td> <td>2005</td> </tr> <tr> <td>Typical Service Life (years):</td> <td>35</td> </tr> <tr> <td>Effective Age (years):</td> <td>18</td> </tr> <tr> <td>Remaining Service Life (years):</td> <td>17</td> </tr> <tr> <td>Planned Renewal Date:</td> <td>2040</td> </tr> </table>	Location:	Balconies and Roof Decks	Year Installed:	2005	Typical Service Life (years):	35	Effective Age (years):	18	Remaining Service Life (years):	17	Planned Renewal Date:	2040	
	Location:	Balconies and Roof Decks												
	Year Installed:	2005												
	Typical Service Life (years):	35												
	Effective Age (years):	18												
	Remaining Service Life (years):	17												
	Planned Renewal Date:	2040												
<p>Description: The exterior swing doors are aluminum framed with glass panels and are located at balconies and roof decks.</p>														
<p>Condition: The swing doors are in satisfactory condition with no major deficiencies observed or reported.</p>														
<p>Comments: The swing doors generally have long service lives if properly maintained and are often replaced for aesthetic reasons. Reserve costs for this component allow for the replacement of the swing doors after 35 years of service.</p>														


11 TOWNHOUSE ENTRY DOORS			
BUILDING ENVELOPE AND STRUCTURE	Location:	Townhouse Entry	
	Year Installed:	2005	
	Typical Service Life (years):	30	
	Effective Age (years):	18	
	Remaining Service Life (years):	12	
	Planned Renewal Date:	2035	
	<p>Description: The exterior townhouse entry doors are metal clad wooden swing doors.</p> <p>Condition: The swing doors are in satisfactory condition with no major deficiencies observed or reported. JRS understands targeted repairs to the mechanical components were completed in 2010.</p> <p>Comments: The swing doors generally have long service lives if properly maintained and are often replaced for aesthetic reasons. Reserve costs for this component allow for the replacement of the swing doors after 30 years of service.</p>		


12 MAIN ENTRY DOORS			
BUILDING ENVELOPE AND STRUCTURE	Location:	Building Entry	
	Year Installed:	2005	
	Typical Service Life (years):	35	
	Effective Age (years):	18	
	Remaining Service Life (years):	17	
	Planned Renewal Date:	2040	
	<p>Description: The glass panel and double swing entrance doors are installed on the east and south entrances of the building.</p> <p>Condition: The front entrance doors are in satisfactory condition with no major deficiencies observed or reported.</p> <p>Comments: Reserve costs include full replacement of the front entrance doors.</p>		

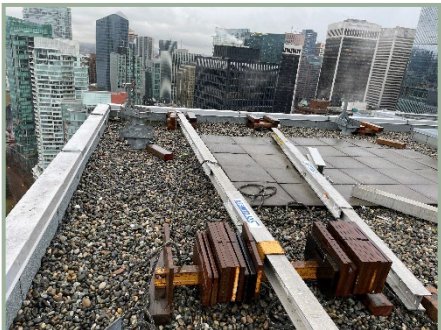
13 SERVICE DOORS			
BUILDING ENVELOPE AND STRUCTURE	Location:	Throughout Property	
	Year Installed:	2005	
	Typical Service Life (years):	40	
	Effective Age (years):	18	
	Remaining Service Life (years):	22	
	Planned Renewal Date:	2045	
	<p>Description: The exterior/interior service swing doors are metal doors and are located throughout the property including at building egress locations and parkade elevator lobby entrances.</p> <p>Condition: The swing doors are in satisfactory condition with no major deficiencies observed or reported.</p> <p>Comments: The swing doors generally have long service lives if properly maintained and are often replaced for aesthetic reasons. Reserve costs for this component allow for the replacement of the swing doors after 40 years of service.</p>		


14 GARAGE DOORS			
BUILDING ENVELOPE AND STRUCTURE	Location:	Parkade	
	Year Installed:	2005	
	Typical Service Life (years):	35	
	Effective Age (years):	18	
	Remaining Service Life (years):	17	
	Planned Renewal Date:	2040	
	<p>Description: The metal picket garage doors are installed at the entrance of the parkade shared between Callisto and Carina, and between the residential and visitors' areas. They are powered by motorized units.</p> <p>Condition: The garage doors are in satisfactory condition with no major deficiencies observed. According to the information provided, the main garage door was replaced in 2007.</p> <p>Comments: Metal garage doors generally have a long service life if no vehicle collisions occur. However, the mechanical components and accessories (e.g., bearings, tracks) may require replacement more frequently. Allowances have been included for garage door motor replacements periodically. Reserve costs include the renewal of the main garage door (costs represent 56% share of strata) and the garage door dividing the residential and visitors' areas.</p>		

15 SEALANT			
BUILDING ENVELOPE AND STRUCTURE	Location:	Building Exterior	
	Year Installed:	2005	
	Typical Service Life (years):	10	
	Effective Age (years):	8	
	Remaining Service Life (years):	2	
	Planned Renewal Date:	2025	
	<p>Description: Sealant provides a moisture barrier at wall penetrations, transitional openings (e.g., window and door assemblies) and exterior cladding transitions (e.g., window wall-to-stone tile cladding).</p> <p>Condition: The sealant is in overall satisfactory condition with isolated sections of failing and peeling sealant observed from the rope drops.</p> <p>Comments: Sealant provides the first line of defence against water ingress in the building wall assemblies. The service life of the sealant depends significantly on the preparation of the substrate and proper application. An average service life of 8-10 years is estimated for sealant and should be replaced in conjunction with the painting project to reduce mobilization costs. An allowance for targeted replacement of sealant has been included in the Reserve costs.</p>		


16 PAINT COATING			
BUILDING ENVELOPE AND STRUCTURE	Location:	Building Exterior	
	Year Installed:	2005	
	Typical Service Life (years):	10	
	Effective Age (years):	8	
	Remaining Service Life (years):	2	
	Planned Renewal Date:	2025	
	<p>Description: The exterior paint coating is applied on the exposed concrete cladding and metal cladding features.</p> <p>Condition: The paint coating is in overall satisfactory condition with signs of algae and bubbling/peeling paint in targeted areas. JRS understands that the balcony soffits were repainted to cover reinforcing bar chair corrosions in 2015-2017.</p> <p>Comments: Reserve costs include full renewal of the paint. Regular cleaning is recommended to maintain the service life of the underlying concrete structure. Renewal of the paint coating should be completed in conjunction with the sealant replacement.</p>		


17 CANOPIES			
BUILDING ENVELOPE AND STRUCTURE	Location:	Building Exterior	
	Year Installed:	2005	
	Typical Service Life (years):	30	
	Effective Age (years):	18	
	Remaining Service Life (years):	12	
	Planned Renewal Date:	2035	
	<p>Description: This component includes the glass canopies at the building and townhouse unit entrances.</p> <p>Condition: The canopies are in satisfactory condition with no reported issues.</p> <p>Comments: Reserve costs include full renewal of the canopies at the end of its typical lifespan.</p>		

18 LOW SLOPE ROOF			
BUILDING ENVELOPE AND STRUCTURE	Location:	Roofs	
	Year Installed:	2005	
	Typical Service Life (years):	25	
	Effective Age (years):	18	
	Remaining Service Life (years):	7	
	Planned Renewal Date:	2030	
	<p>Description: The building's roofing system consists of inverted roof assemblies. The main roof consists of a 2-ply torch applied styrene-butadiene-styrene (SBS) membrane. The roof areas are protected by a membrane and covered with rigid insulation and either gravel ballast or concrete pavers.</p> <p>Condition: The roof membranes are in overall satisfactory condition.</p> <p>Comments: Organic matter and debris should be removed as build-up occurs. It is recommended to complete a Roof Condition Assessment 3 years prior to the end of the typical service life to better understand the condition of the roofing membrane. Reserve costs include allowances for a condition assessment and renewal of the assembly.</p>		

19 BELOW GRADE MEMBRANE			
BUILDING ENVELOPE AND STRUCTURE	Location:	Below Grade	
	Year Installed:	2005	
	Typical Service Life (years):	50	
	Effective Age (years):	18	
	Remaining Service Life (years):	32	
	Planned Renewal Date:	2055	
	<p>Description: This component includes the waterproofing membrane that exists on the exterior side of the parkade foundation walls. It is used to protect the underground parkade from water penetration.</p> <p>Condition: JRS completed a targeted exploratory opening review and did not observe any areas of concern with the below grade membrane. However, JRS understands that a leak was reported earlier this year, and an inspection is ongoing at the water fountain.</p> <p>Comments: A below grade membrane is designed to protect the underground foundation and parkade from water ingress. Failure of the waterproofing membrane can lead to leakage through the suspended parkade slab, resulting in delamination and spalling of the concrete. JRS recommends investigating and addressing the source of the water ingress to prevent deterioration of the surrounding concrete structure. Allowances have been made for a below grade membrane condition assessment for this leak and the partial renewals after 30 and 40 years of service. Concrete repairs, drainage mats, filter fabrics or other waterproofing accessories are not included.</p>		

INTERIOR

20 LOBBY			
INTERIOR	Location:	Lobby	
	Year Installed:	2005	
	Typical Service Life (years):	20	
	Effective Age (years):	18	
	Remaining Service Life (years):	2	
	Planned Renewal Date:	2025	
<p>Description: The lobby finishes include a combination of tile and wood panel walls, granite tile floors, water fountain tiling/membrane and painted drywall ceilings. Furnishings include couches, concierge desks, wood tables, and lights.</p> <p>Condition: The lobby finishes and furniture are in satisfactory condition with no major deficiencies observed.</p> <p>Comments: Due to the aesthetic nature of the interiors, the renewal year is subjective and at the discretion of the Owners. Information about the extent and cost of the renewal of this component has been provided by the Renovation Committee of the Callisto Strata Council. The cost estimate was based on a design provided by the architecture firm Dialogue Design and a budget provided by the project management firm Make Projects Ltd. Both firms were engaged by the Renovation Committee.</p>			

21 UNIT ENTRY DOORS			
INTERIOR	Location:	Unit Entries	
	Year Installed:	2005	
	Typical Service Life (years):	50	
	Effective Age (years):	18	
	Remaining Service Life (years):	32	
	Planned Renewal Date:	2055	
<p>Description: This component includes the wood unit entry doors.</p> <p>Condition: The unit entry doors are in satisfactory condition with no major deficiencies observed.</p> <p>Comments: The unit entry doors should be maintained to prolong the service life of this component.</p>			


22 HALLWAYS, STAIRWELLS AND COMMON AREAS	
INTERIOR	Location: Interior
	Year Installed: 2005
	Typical Service Life (years): 15
	Effective Age (years): 13
	Remaining Service Life (years): 2
	Planned Renewal Date: 2025
<p>Description: This component includes the carpeting and painting in the hallways and stairwells.</p> <p>Condition: The carpeting and painting in the hallways appear to be in reasonable condition with no noted damage. JRS understands that targeted repairs have been completed in 2013.</p> <p>Comments: The reserve costs include replacement of all the interior flooring and painting of all interior hallways and stairwells. Information about the extent and cost of the renewal of this component has been provided by the Renovation Committee of the Callisto Strata Council. The cost estimate was based on a design provided by the architecture firm Dialogue Design and a budget provided by the project management firm Make Projects Ltd. Both firms were engaged by the Renovation Committee.</p>	



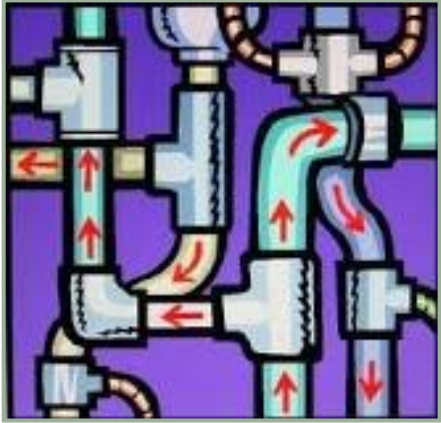
CONVEYANCE


23 ELEVATOR - TRACTION	
CONVEYANCE	Location: Rooftop Elevator Room
	Year Installed: 2005
	Typical Service Life (years): 30
	Effective Age (years): 18
	Remaining Service Life (years): 12
	Planned Renewal Date: 2035
<p>Description: The tower has three overhead gear tractions manufactured by TKE North Elevators. The elevators have infrared door edges, voice call out systems, and are linked to the security system.</p> <p>Condition: The elevator mechanical systems appear to be in satisfactory condition and are maintained by Otis Elevators.</p> <p>Comments: Allowances for targeted repairs have been included based on the TK Elevators Capital Planning report. General renewal and cost information have been provided by Besant & Associates Engineers Ltd. The system should be inspected periodically for failure of gears, valves, door operators, relays, contactors, motor windings, and computer processors. JRS recommends the elevator systems be inspected and assessed by a qualified professional engineer to better gauge renewal year and costs associated with modernization. An allowance has been included for assessment and targeted repairs three years prior to modernization.</p>	

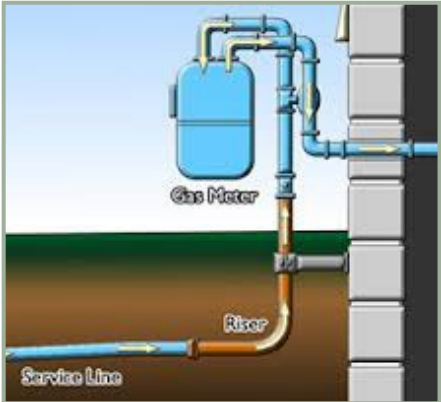


24	ELEVATOR - CAB FINISHES		
CONVEYANCE	Location:	Elevators	
	Year Installed:	2005	
	Typical Service Life (years):	20	
	Effective Age (years):	18	
	Remaining Service Life (years):	2	
	Planned Renewal Date:	2025	
	<p>Description: This component includes the interior finishes of the elevator cab interior.</p> <p>Condition: At all locations observed, the elevator cab finishes are in satisfactory condition with no major deficiencies.</p> <p>Comments: An allowance has been planned for the eventual full renewal of the elevator cab finishes at the same time as modernization of the elevator’s mechanical system. Due to the aesthetic nature of this asset, the frequency, scope, and cost of renewing this item are at the discretion of the Owners. Information about the extent and cost of the renewal of this component has been provided by the Renovation Committee of the Callisto Strata Council. The cost estimate was based on a design provided by the architecture firm Dialogue Design and a budget provided by the project management firm Make Projects Ltd. Both firms were engaged by the Renovation Committee.</p>		

MECHANICAL

25	DOMESTIC WATER PIPES		
MECHANICAL	Location:	Throughout Complex	
	Year Installed:	2005	
	Typical Service Life (years):	30	
	Effective Age (years):	13	
	Remaining Service Life (years):	17	
	Planned Renewal Date:	2040	
	Description: This component includes domestic water distribution (copper piping) for residential units and the building amenities.		
	Condition: The piping is generally in fair condition. For more information, please see the detailed piping assessment report completed by Besant & Associates Engineers Ltd.		
	Comments: Information regarding the condition, renewal and cost for this component has been provided by Besant & Associates Engineers Ltd. An allowance has been provided to replace the copper recirculation pipes as recommended in the detailed piping report. Copper water lines will deteriorate and their risk for failure will increase with time. Predicting when failure will occur is difficult as many variables must be considered including localized water pressure, water quality, temperature, copper material quality/condition, manufacturing/installation conditions, etc. Renewal costs do not include all interior work (e.g., drywall, paint, texturing, and finishes), which may vary substantially based on code updates, material compatibilities, and potential hazardous material in the drywall and insulation, etc. The lifespan of the domestic water pipes can be prolonged if a robust water treatment system is installed.		

26 WATER TREATMENT SYSTEM			
MECHANICAL	Location:	Service Room	
	Year Installed:	2005	
	Typical Service Life (years):	25	
	Effective Age (years):	24	
	Remaining Service Life (years):	1	
	Planned Renewal Date:	2024	
<p>Description: This component includes the water treatment system.</p> <p>Condition: The treatment system is inactive and has reached its typical lifespan.</p> <p>Comments: Information regarding the condition, renewal and cost for this component has been provided by Besant & Associates Engineers Ltd. It is recommended to replace this system to prolong the lifespan of the domestic water pipes.</p>			

27 GAS PIPES			
MECHANICAL	Location:	Underground	
	Year Installed:	2005	
	Typical Service Life (years):	50	
	Effective Age (years):	18	
	Remaining Service Life (years):	32	
	Planned Renewal Date:	2055	
<p>Description: Gas is piped throughout the building for the fireplaces.</p> <p>Condition: The gas piping could not be visually reviewed; however, no issues were reported by the building representative.</p> <p>Comments: Gas piping generally lasts longer than municipal water piping because of the inert nature and lower density of natural gas. An allowance has been included for targeted repair to the gas piping.</p>			

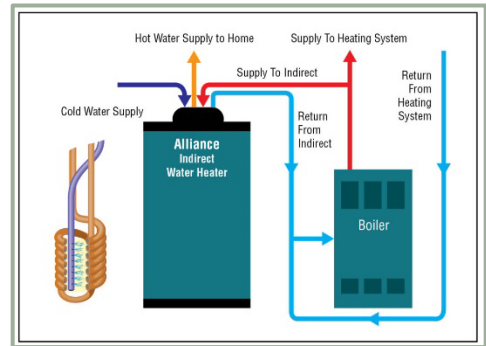
28 SPRINKLER PIPES	
MECHANICAL	Location: Throughout Complex
	Year Installed: 2005
	Typical Service Life (years): 50
	Effective Age (years): 18
	Remaining Service Life (years): 32
	Planned Renewal Date: 2055
<p>Description: This component includes the automated sprinkler system servicing the tower and the parkade in the complex and consists of sprinkler pipes and pumping/compressor equipment.</p> <p>Condition: The sprinkler pipes and fire pump components are in satisfactory condition with no major deficiencies observed or reported.</p> <p>Comments: The fire suppression lines will likely last for a significant period of time. Costs associated with this asset will likely consist of upgrading or repairing mechanical components such as: sprinkler heads, pumps, air compressors, etc. An allowance has been included to replace valves, pumps and controls as recommended by Besant & Associates Engineers Ltd.</p>	



29 DOMESTIC HOT WATER BOILER

MECHANICAL

Location:	Mechanical Room
Year Installed:	2005
Typical Service Life (years):	25
Effective Age (years):	20
Remaining Service Life (years):	5
Planned Renewal Date:	2028



Description: There is a medium efficiency hot water domestic boiler manufactured by Raypack XFire located in the mechanical room. The boiler is maintained by Honeywell.

Condition: The boiler is in serviceable condition.

Comments: Information regarding the condition, renewal and cost for this component has been provided by Besant & Associates Engineers Ltd. Regular maintenance and inspection should be undertaken to ensure that the boilers are operating at full efficiency. The boilers have a typical service life of around 25-30 years, varying based on frequency of use and maintenance.

30 HOT WATER STORAGE TANKS

MECHANICAL


Location:	Mechanical Rooms
Year Installed:	2005
Typical Service Life (years):	25
Effective Age (years):	20
Remaining Service Life (years):	5
Planned Renewal Date:	2028




Description: There are four hot water storage tanks that store hot water from the boiler for distribution to individual suites and amenities. The hot water storage tanks are maintained by Honeywell.

Condition: The hot water storage tanks are in serviceable condition.

Comments: Information regarding the condition, renewal and cost for this component has been provided by Besant & Associates Engineers Ltd. Regular maintenance and inspection should be undertaken to ensure that the hot water storage tanks are operating at full efficiency. The tanks have a typical service life of around 20-25 years, varying based on frequency of use and maintenance.

31	HEATING BOILER		
MECHANICAL	Location:	Mechanical Room	
	Year Installed:	2005	
	Typical Service Life (years):	25	
	Effective Age (years):	20	
	Remaining Service Life (years):	5	
	Planned Renewal Date:	2028	
	<p>Description: There are two Laars gas-fired atmospheric type boilers located in the mechanical rooms. The boilers are maintained by Honeywell. The boilers provide heated hot water for the primary water source heat pump loop, air handling units, and double walled heat exchangers that heat the pool and hot tub.</p> <p>Condition: The boilers are in serviceable condition. JRS understands that the boilers were overhauled in 2017.</p> <p>Comments: Information regarding the condition, renewal and cost for this component has been provided by Besant & Associates Engineers Ltd. Regular maintenance and inspection should be undertaken to ensure that the boilers are operating at full efficiency. The boilers have a typical service life of around 20-25 years, varying based on frequency of use and maintenance. While the purpose of the depreciation report is not to include any new components, Besant & Associates Engineers Ltd. recommended to install a new boiler for the pool, hot tub and make up air unit; the cost is estimated in the range of \$300,000.</p>		

32 HEAT PUMPS	
MECHANICAL	Location: Inside Units
	Year Installed: 2005
	Typical Service Life (years): 20
	Effective Age (years): 19
	Remaining Service Life (years): 1
	Planned Renewal Date: 2024
	
<p>Description: Each suite has at least two Trane heat pumps that provide heating and cooling capacity throughout the units.</p> <p>Condition: The heat pumps are generally in serviceable condition. JRS understands that targeted heat pumps have been replaced on a periodic basis.</p> <p>Comments: Information regarding the condition, renewal and cost for this component has been provided by Besant & Associates Engineers Ltd. An allowance has been added to replace targeted heat pumps on an annual basis.</p>	

33 MISCELLANEOUS MECHANICAL COMPONENTS	
MECHANICAL	Location: Mechanical Rooms
	Year Installed: 2005
	Typical Service Life (years): 15
	Effective Age (years): 9
	Remaining Service Life (years): 6
	Planned Renewal Date: 2029
<p>Description: The miscellaneous mechanical components include pressure release valves, expansion tanks, air compressors, circulation pumps for heating and cooling and other valves and pumps in the mechanical rooms.</p> <p>Condition: These components are generally in serviceable condition and no issues were reported to JRS.</p> <p>Comments: Information regarding the condition, renewal and cost for this component has been provided by Besant & Associates Engineers Ltd. Allowances have been provided every 5 years for the renewal of a percentage of the miscellaneous mechanical components. An additional allowance has been provided to replace the circulation pumps for heating and cooling in 2034.</p>	




34 COOLING TOWER		
MECHANICAL	Location:	Rooftop
	Year Installed:	2005
	Typical Service Life (years):	30
	Effective Age (years):	6
	Remaining Service Life (years):	24
	Planned Renewal Date:	2047


The diagram illustrates the internal structure of a cooling tower. At the top, a fan draws air upwards, labeled 'Hot Evaporate Air'. On the right side, 'Hot Water In' enters the tower. The water is distributed over a series of horizontal trays or fill. Air enters from the left side, labeled 'Cool Dry Entering Air'. As the air passes through the water, it is cooled and humidified. The cooled water then exits from the bottom right side, labeled 'Cooled Water Out'.


Description: This component includes a cooling tower pump, fan and system equipment located at the top of the roof.


Condition: The cooling tower is in serviceable condition. JRS understands that an overhaul of the tower was completed in 2018.

Comments: Information regarding the condition, renewal and cost for this component has been provided by Besant & Associates Engineers Ltd. An allowance to refurbish the cooling tower has been added in 2027.

35 HVAC - BUILDING			
MECHANICAL	Location:	Rooftop and Mechanical Room	
	Year Installed:	2005	
	Typical Service Life (years):	30	
	Effective Age (years):	4	
	Remaining Service Life (years):	26	
	Planned Renewal Date:	2049	
<p>Description: This component includes the make-up air units (MAU) serving the building, the MAU located in the parkade level mechanical room serving the pool area and common area exhaust fans (excluding the parking garage) found on the rooftops.</p> <p>Condition: This component appears to be in functioning condition.</p> <p>Comments: Information regarding the condition, renewal and cost for this component has been provided by Besant & Associates Engineers Ltd. Mechanical HVAC equipment requires regular maintenance in order to perform as expected. In addition, regular maintenance can extend the service lives of many components of the building's HVAC. The reserve cost includes an allowance for professional review and full replacement of the HVAC components when they fail. An allowance to refurbish the roof mounted make-up air units has been included in 2025.</p>			

36 HVAC - PARKADE			
MECHANICAL	Location:	Parkade	
	Year Installed:	2005	
	Typical Service Life (years):	30	
	Effective Age (years):	13	
	Remaining Service Life (years):	17	
	Planned Renewal Date:	2040	
<p>Description: This component includes the CO sensors and exhaust fans used to ventilate the parkade areas.</p> <p>Condition: This component appears to be in functioning condition.</p> <p>Comments: As with the building HVAC system, the parkade HVAC equipment requires maintenance and regular inspection in order to operate at peak efficiency. The reserve costs include full replacement of the parkade ventilation components when they fail as well as an allowance for a professional review prior to its replacement.</p>			

37 SUMP PUMPS	
MECHANICAL	Location: Parkade
	Year Installed: 2005
	Typical Service Life (years): 10
	Effective Age (years): 5
	Remaining Service Life (years): 5
	Planned Renewal Date: 2028
	
<p>Description: There are duplex sump pump systems for sanitary and storm water as well as for elevator sump pits.</p> <p>Condition: The sump pumps are in serviceable condition with no reported issues.</p> <p>Comments: Reserve costs include full renewal of the pumps at the end of its typical lifespan.</p>	

38 WATER FEATURE MECHANICAL COMPONENTS	
MECHANICAL	Location: Mechanical Room
	Year Installed: 2005
	Typical Service Life (years): 25
	Effective Age (years): 18
	Remaining Service Life (years): 7
	Planned Renewal Date: 2030
	
<p>Description: This component includes the indoor water feature and outdoor water fountain mechanical system including the pump, filter, and piping.</p> <p>Condition: The water feature mechanical system is in serviceable condition.</p> <p>Comments: Information regarding the condition, renewal and cost for this component has been provided by Besant & Associates Engineers Ltd. Reserve costs include full renewal of the water feature mechanical system.</p>	

39 POOL AND HOT TUB MECHANICAL COMPONENTS

MECHANICAL	Location:	Mechanical Room
	Year Installed:	2005
	Typical Service Life (years):	25
	Effective Age (years):	14
	Remaining Service Life (years):	11
	Planned Renewal Date:	2034



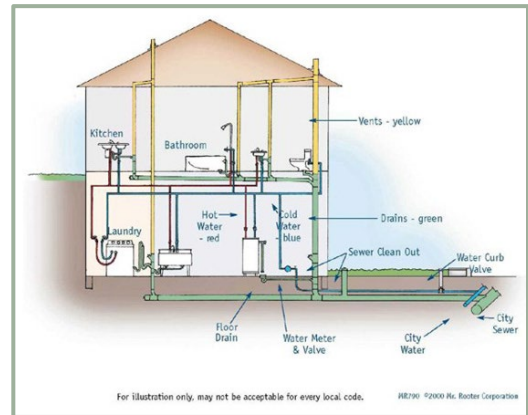
Description: This component includes the pool, and hot tub feature mechanical system including the pump, filter, and piping.

Condition: The pool and hot tub system are in serviceable condition.

Comments: Information regarding the condition, renewal and cost for this component has been provided by Besant & Associates Engineers Ltd. Reserve costs include full renewal of the pool and hot tub mechanical system. An allowance has been provided to install a new pool and hot tub boiler as recommended by Besant Associates Engineers Ltd.

40 SANITARY AND DRAINAGE LINES

MECHANICAL	Location:	Throughout Building
	Year Installed:	2005
	Typical Service Life (years):	40
	Effective Age (years):	19
	Remaining Service Life (years):	21
	Planned Renewal Date:	2044





Description: This component includes the sanitary and storm piping running from the units' kitchens.


Condition: The sanitary and storm piping is generally in serviceable condition.


Comments: Information regarding the condition, renewal and cost for this component has been provided by Besant & Associates Engineers Ltd. Reserve costs include full renewal of this component.


ELECTRICAL

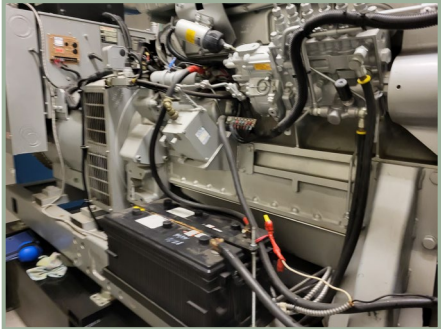
41 SERVICE DISTRIBUTION			
ELECTRICAL	Location:	Electrical Room	
	Year Installed:	2005	
	Typical Service Life (years):	50	
	Effective Age (years):	18	
	Remaining Service Life (years):	32	
	Planned Renewal Date:	2055	
	<p>Description: This component includes incoming underground service and electrical equipment (i.e., circuit breaker panels, electrical panels, and disconnect switches) inside electrical rooms. Transformers of various sizes are included.</p> <p>Condition: The service distribution components appear to be in satisfactory condition.</p> <p>Comments: Allowances have been included every 5 years for infrared scanning and vault maintenance of the electrical rooms.</p>		

42 POWER DISTRIBUTION			
ELECTRICAL	Location:	Throughout Building	
	Year Installed:	2005	
	Typical Service Life (years):	40	
	Effective Age (years):	18	
	Remaining Service Life (years):	22	
	Planned Renewal Date:	2045	
	<p>Description: This component includes a small percentage of wiring in walls and lighting (interiors, exit signs, parkade).</p> <p>Condition: The wiring could not be visually inspected; however, it is generally in functioning condition with no reported issues. JRS understands that targeted lights have been renewed to LED in 2015.</p> <p>Comments: Information regarding the condition, renewal and cost for this component has been provided by Besant & Associates Engineers Ltd. An allowance has been added to replace the common area lighting in 2034. Routine inspection and maintenance should be performed as required. Reserve costs are to replace a small percentage of the building wiring, as it is expected to last the lifetime of the building, and partial renewals for lighting, baseboard heaters and exit signs.</p>		


43 ENTERPHONE SYSTEM			
ELECTRICAL	Location:	Front Entrance	
	Year Installed:	2023	
	Typical Service Life (years):	20	
	Effective Age (years):	1	
	Remaining Service Life (years):	19	
	Planned Renewal Date:	2042	
<p>Description: This component includes the enterphone systems at the entrances to the buildings.</p> <p>Condition: The enterphone systems are in reasonable condition and were replaced in 2023.</p> <p>Comments: Reserve costs include full renewal of the enterphone system.</p>			


44 SECURITY SYSTEM AND CAMERAS			
ELECTRICAL	Location:	Throughout Building	
	Year Installed:	2023	
	Typical Service Life (years):	20	
	Effective Age (years):	1	
	Remaining Service Life (years):	19	
	Planned Renewal Date:	2042	
<p>Description: This component includes the cameras, recording and monitoring devices, a computer, and fob access scanners.</p> <p>Condition: The security access system is in reasonable condition. JRS understands that a new DVR system was installed in 2017.</p> <p>Comments: Information regarding the condition, renewal and cost for this component has been provided by Besant & Associates Engineers Ltd. Electronic equipment is sensitive to dust and debris. As such, they should be inspected and cleaned regularly. Any upgrades or expansions of the system will affect the cost. As issues arise, they should be repaired immediately to maintain building security. Reserve costs include an allowance, the cost provided by the Strata Corporation, to replace the security system.</p>			


45 FIRE ALARM PANEL			
ELECTRICAL	Location:	Throughout Complex	
	Year Installed:	2005	
	Typical Service Life (years):	30	
	Effective Age (years):	26	
	Remaining Service Life (years):	4	
	Planned Renewal Date:	2027	
<p>Description: This component includes the fire alarm panels and annunciator at the common building entrances, as well as emergency lighting throughout the building. The panel is used by firefighters in case of an emergency to locate the fire.</p> <p>Condition: The fire alarm panel is in fair condition with no reported issues.</p> <p>Comments: The fire alarm system should be inspected regularly, ensuring that it functions as intended. An allowance has been included for a professional review prior to the planned replacement.</p>			

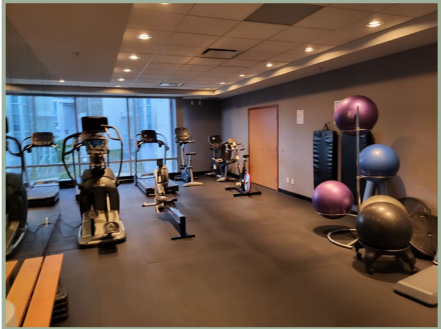
46 EMERGENCY GENERATOR			
ELECTRICAL	Location:	P1 Level	
	Year Installed:	2005	
	Typical Service Life (years):	40	
	Effective Age (years):	18	
	Remaining Service Life (years):	22	
	Planned Renewal Date:	2045	
<p>Description: This component includes a 400 kW Volvo diesel emergency generator located in the P1 level of parking garage.</p> <p>Condition: The emergency generator appears to be in functioning condition with no issues reported.</p> <p>Comments: Information regarding the condition, renewal and cost for this component has been provided by Besant & Associates Engineers Ltd. The emergency generator should be inspected regularly, ensuring that it functions as intended. An allowance to refurbish the generator has been added in 2025.</p>			

SPECIALTY

47	LOUNGE		
SPECIALTY	Location:	First Floor	
	Year Installed:	2005	
	Typical Service Life (years):	20	
	Effective Age (years):	18	
	Remaining Service Life (years):	2	
	Planned Renewal Date:	2025	
	<p>Description: This component includes the lounge interior finishes including flooring, wall paint, furniture, and doors.</p>		
<p>Condition: The lounge is generally in reasonable condition.</p>			
<p>Comments: Due to the aesthetic nature of the interiors, the renewal year is subjective and at the discretion of the Owners. Information about the extent and cost of the renewal of this component has been provided by the Renovation Committee of the Callisto Strata Council. The cost estimate was based on a design provided by the architecture firm Dialogue Design and a budget provided by the project management firm Make Projects Ltd. Both firms were engaged by the Renovation Committee.</p>			

48	MEETING ROOM		
SPECIALTY	Location:	First Floor	
	Year Installed:	2005	
	Typical Service Life (years):	15	
	Effective Age (years):	13	
	Remaining Service Life (years):	2	
	Planned Renewal Date:	2025	
	<p>Description: This component includes the meeting room's interior finishes including flooring, wall paint, furniture, and glass walls.</p>		
	<p>Condition: The meeting room is generally in reasonable condition.</p>		
	<p>Comments: Due to the aesthetic nature of the interiors, the renewal year is subjective and at the discretion of the Owners. Information about the extent and cost of the renewal of this component has been provided by the Renovation Committee of the Callisto Strata Council. The cost estimate was based on a design provided by the architecture firm Dialogue Design and a budget provided by the project management firm Make Projects Ltd. Both firms were engaged by the Renovation Committee.</p>		

49 MULTIMEDIA ROOM			
SPECIALTY	Location:	First Floor	
	Year Installed:	2005	
	Typical Service Life (years):	15	
	Effective Age (years):	11	
	Remaining Service Life (years):	4	
	Planned Renewal Date:	2027	
<p>Description: This component includes the multimedia room’s interior finishes including flooring, wall paint, furniture, and multimedia equipment.</p> <p>Condition: The multimedia room is generally in reasonable condition. JRS understands that the finishes, furniture, and equipment were renewed in 2014.</p> <p>Comments: Due to the aesthetic nature of the interiors, the renewal year is subjective and at the discretion of the Owners. Reserve costs include periodic allowance for upgrades as needed.</p>			

50 FITNESS ROOM			
SPECIALTY	Location:	Second Floor	
	Year Installed:	2005	
	Typical Service Life (years):	15	
	Effective Age (years):	11	
	Remaining Service Life (years):	4	
	Planned Renewal Date:	2027	
<p>Description: This component includes the fitness room’s interior finishes including flooring, wall paint, and fitness equipment.</p> <p>Condition: The fitness room is generally in reasonable condition. JRS understands that the fitness room equipment was replaced in 2016.</p> <p>Comments: Due to the aesthetic nature of the interiors, the renewal year is subjective and at the discretion of the Owners. Reserve costs include periodic allowance for upgrades as needed.</p>			


51 SWIMMING POOL, HOT TUB AND STEAM ROOM	
SPECIALTY	Location: Pool Area
	Year Installed: 2005
	Typical Service Life (years): 15
	Effective Age (years): 11
	Remaining Service Life (years): 4
	Planned Renewal Date: 2027
<p>Description: This component includes the finishing and equipment for the main swimming pool, hot tub, and steam room.</p> <p>Condition: The swimming pool, hot tub and steam room are room is generally in reasonable condition. JRS understands that targeted tiles have been renewed at the hot tub and steam room in 2015 and 2009.</p> <p>Comments: Allowances have been included for the targeted renewal of the swimming pool and hot tub.</p>	





52 WASHROOMS AND CHANGEROOMS	
SPECIALTY	Location: Pool Area
	Year Installed: 2005
	Typical Service Life (years): 15
	Effective Age (years): 11
	Remaining Service Life (years): 4
	Planned Renewal Date: 2027
<p>Description: This component includes the finishing, and washroom fixtures in the two changing rooms.</p> <p>Condition: The change rooms are in reasonable condition with no reported issues.</p> <p>Comments: Reserve costs include allowances for the targeted renewals of finishing, and fixtures.</p>	

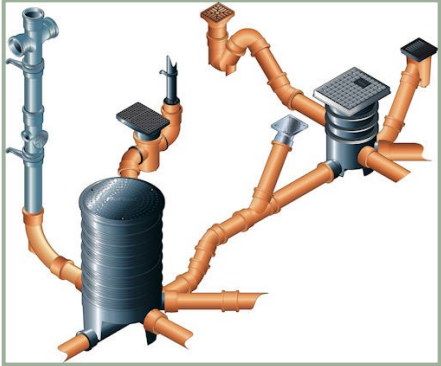



SITE SERVICES


53	SOFTSCAPING		
SITE SERVICES	Location:	Around Property	
	Year Installed:	2005	
	Typical Service Life (years):	50	
	Effective Age (years):	18	
	Remaining Service Life (years):	32	
	Planned Renewal Date:	2055	
<p>Description: The softscaping includes the removal and reinstatement of the landscaped area near the fountain, and the landscaped areas around the property. The softscaping area is being maintained by Paraspace.</p> <p>Condition: The softscaping is in satisfactory condition with no major deficiencies observed.</p> <p>Comments: Replacement is scheduled to occur simultaneously with the replacement of the waterproofing membrane, as this type of work will typically require the removal of the surrounding landscaping. An allowance has been included in conjunction with the below grade membrane renewal. Due to the aesthetic nature of this asset, its renewal year is subjective, and therefore, renewal requirements are at the discretion of the Owners. The cost of this reserve item is based on the overall complexity of vegetation, frequency of replacement of large trees, and total area. An allowance has been included for future expenses to the parkade leak by the fountain.</p>			


54 HARDCAPING			
SITE SERVICES	Location:	Around Property	
	Year Installed:	2005	
	Typical Service Life (years):	50	
	Effective Age (years):	18	
	Remaining Service Life (years):	32	
	Planned Renewal Date:	2055	
	<p>Description: This component includes the concrete parkade ramps, curbs, walkways, staircases, pavers, and asphalt driveway around the property.</p> <p>Condition: The hardscaping is in overall satisfactory condition with no reported issues.</p> <p>Comments: Targeted repair is scheduled to occur simultaneously with the replacement of the below grade waterproofing membrane, as this type of work will require the removal of the majority of the hardscaping elements. Allowances have also been allocated for targeted hardscaping repairs at the 30- and 50-year mark to address major renewals. Due to the aesthetic nature of this asset, its renewal year is subjective and therefore renewal requirements are at the discretion of the Owners. An allowance has been included for future expenses to the parkade leak by the fountain.</p>		

55 OUTDOOR FOUNTAIN			
SITE SERVICES	Location:	Around Property	
	Year Installed:	2005	
	Typical Service Life (years):	40	
	Effective Age (years):	18	
	Remaining Service Life (years):	22	
	Planned Renewal Date:	2045	
<p>Description: This component includes the hardscaping and glass finishing associated with the fountain located east of the property above the parkade entrance.</p> <p>Condition: The water feature is in fair condition with no reported issues.</p> <p>Comments: Reserve costs include allowances for targeted repairs for a large-scale renewal after 40 years of service.</p>			

56 UNDERGROUND WATER SUPPLY AND DRAINAGE			
SITE SERVICES	Location:	Underground	
	Year Installed:	2005	
	Typical Service Life (years):	40	
	Effective Age (years):	18	
	Remaining Service Life (years):	22	
	Planned Renewal Date:	2045	
<p>Description: This component consists of the incoming water supply from the water mains, sewer, and stormwater drainage, and perimeter drain tile.</p> <p>Condition: These components could not be visually reviewed; however, they are generally in satisfactory condition with no reported issues.</p> <p>Comments: Reserve costs consist of an allowance to replace a percentage of the underground piping systems. Additional allowance has been included to flush the drainage system every 5 years.</p>			

57 OUTDOOR LIGHTING AND ELECTRICAL			
SITE SERVICES	Location:	Around Property	
	Year Installed:	2005	
	Typical Service Life (years):	40	
	Effective Age (years):	18	
	Remaining Service Life (years):	22	
	Planned Renewal Date:	2045	
<p>Description: This component includes the pole and other exterior lighting around the complex.</p> <p>Condition: The lights are in reasonable condition with no reported issues.</p> <p>Comments: Reserve costs include full renewal of all exterior lights.</p>			

58 RETAINING WALLS			
SITE SERVICES	Location:	Around Property	
	Year Installed:	2005	
	Typical Service Life (years):	40	
	Effective Age (years):	18	
	Remaining Service Life (years):	22	
	Planned Renewal Date:	2045	
<p>Description: This component includes the concrete retaining walls around the complex.</p> <p>Condition: The retaining walls are generally in reasonable condition.</p> <p>Comments: Periodic cleaning and maintenance are recommended. Reserve costs include allowance for repairs.</p>			

59 GLASS FENCING AND METAL GATES			
SITE SERVICES	Location:	Around Property	
	Year Installed:	2005	
	Typical Service Life (years):	30	
	Effective Age (years):	18	
	Remaining Service Life (years):	12	
	Planned Renewal Date:	2035	
<p>Description: This component includes the metal supported glass fencing with metal gates around the property and primarily at the townhouse entrances.</p> <p>Condition: The glass fencing, and metal gates are in satisfactory condition with no major deficiencies observed or reported.</p> <p>Comments: Reserve costs include the full replacement after 30 years of service.</p>			

APPENDIX B

LIFECYCLE RENEWAL COSTS

(BENCHMARK ANALYSIS)

CALLISTO
LIFE CYCLE RENEWAL COSTS

Inflation Factor 3.0%
Interest Rate 1.50%

RESERVE COMPONENTS BENCHMARK ANALYSIS	YEAR INSTALLED	TYPICAL LIFE (Yrs)	EFFECTIVE AGE (Yrs)	REMAINING LIFE (Yrs)	RENEWAL YEAR	CURRENT REPLACEMENT COST	FUTURE REPLACEMENT COST	CURRENT RESERVE FUND REQUIREMENT	FUTURE RESERVE FUND ACCUMULATION	FUTURE RESERVE FUND REQUIREMENT	ANNUAL RESERVE FUND ASSESSMENT	RESERVE FUND ASSESSMENT ALLOCATION
BUILDING ENVELOPE AND STRUCTURE												
1 Parkade	2005	50	18	32	2055	430,000	1,107,286	154,800	249,278	858,007	21,087	1.10%
2 Parkade Traffic Membrane	2005	15	8	7	2030	1,260,000	1,549,641	672,000	745,816	803,825	109,767	5.73%
3 Balcony Guardrails	2005	40	14	26	2049	499,500	1,077,217	174,825	257,466	819,751	26,012	1.36%
4 Balcony & Eyebrow Membrane Assemblies	2005	20	13	7	2030	739,200	909,123	480,480	533,258	375,864	51,327	2.68%
5 Deck Membrane Assemblies	2005	30	18	12	2035	776,000	1,106,390	465,600	556,680	549,711	42,152	2.20%
6 Window Wall	2005	40	18	22	2045	10,373,000	19,875,741	4,667,850	6,476,939	13,398,801	518,578	27.05%
7 Curtain Wall	2005	40	18	22	2045	3,176,000	6,085,544	1,429,200	1,983,106	4,102,438	158,778	8.28%
8 Exterior Walls - Concrete	2005	40	18	22	2045	441,000	845,002	198,450	275,362	569,640	22,047	1.15%
9 Sliding Doors	2005	40	18	22	2045	605,000	1,159,243	272,250	377,764	781,478	30,246	1.58%
10 Swing Doors	2005	35	18	17	2040	126,000	208,259	64,800	83,464	124,795	6,499	0.34%
11 Townhouse Entry Doors	2005	30	18	12	2035	42,000	59,882	25,200	30,130	29,752	2,281	0.12%
12 Main Entry Doors	2005	35	18	17	2040	15,800	26,115	8,126	10,466	15,649	815	0.04%
13 Service Doors	2005	40	18	22	2045	41,000	78,560	18,450	25,601	52,960	2,050	0.11%
14 Garage Doors	2005	35	18	17	2040	15,000	24,793	7,714	9,936	14,857	774	0.04%
15 Sealant	2005	10	8	2	2025	218,300	231,594	174,640	179,918	51,676	25,646	1.34%
16 Paint Coating	2005	10	8	2	2025	374,400	397,201	299,520	308,573	88,628	43,984	2.29%
17 Canopies	2005	30	18	12	2035	60,000	85,546	36,000	43,042	42,503	3,259	0.17%
18 Low Slope Roof	2005	25	18	7	2030	553,800	681,104	398,736	442,535	238,569	32,578	1.70%
19 Below Grade Membrane	2005	50	18	32	2055	436,000	1,122,736	156,960	252,757	869,980	21,382	1.12%
INTERIOR												
20 Lobby	2005	20	18	2	2025	1,492,850	1,583,765	1,343,565	1,384,174	199,590	99,052	5.17%
21 Unit Entry Doors	2005	50	18	32	2055	175,000	450,639	63,000	101,450	349,189	8,582	0.45%
22 Hallways, Stairwells and Common Areas	2005	15	13	2	2025	1,317,425	1,397,656	1,141,768	1,176,278	221,378	109,865	5.73%
CONVEYANCE												
23 Elevator - Traction	2005	30	18	12	2035	900,000	1,283,185	540,000	645,634	637,551	48,887	2.55%
24 Elevator - Cab Finishes	2005	20	18	2	2025	90,000	95,481	81,000	83,448	12,033	5,972	0.31%
MECHANICAL												
25 Domestic Water Pipes	2005	30	13	17	2040	1,800,000	2,975,126	780,000	1,004,656	1,970,470	102,621	5.35%
26 Water Treatment System	2005	25	24	1	2024	75,000	77,250	72,000	73,080	4,170	4,170	0.22%
27 Gas Pipes	2005	50	18	32	2055	12,500	32,189	4,500	7,246	24,942	613	0.03%
28 Sprinkler Pipes	2005	50	18	32	2055	95,000	244,633	34,200	55,073	189,560	4,659	0.24%
29 Domestic Hot Water Boiler	2005	25	20	5	2028	70,000	81,149	56,000	60,328	20,821	4,041	0.21%
30 Hot Water Storage Tanks	2005	25	20	5	2028	29,250	33,909	23,400	25,208	8,700	1,689	0.09%
31 Heating Boiler	2005	25	20	5	2028	120,000	139,113	96,000	103,419	35,694	6,928	0.36%
32 Heat Pumps	2005	20	19	1	2024	1,128,000	1,161,840	1,071,600	1,087,674	74,166	74,166	3.87%
33 Miscellaneous Mechanical Components	2005	15	9	6	2029	97,500	116,420	58,500	63,966	52,454	8,420	0.44%
34 Cooling Tower	2005	30	6	24	2047	150,000	304,919	30,000	42,885	262,034	9,151	0.48%
35 HVAC - Building	2005	30	4	26	2049	200,000	431,318	26,667	39,272	392,046	12,440	0.65%
36 HVAC - Parkade	2005	30	13	17	2040	80,000	132,228	34,667	44,651	87,576	4,561	0.24%
37 Sump Pumps	2005	10	5	5	2028	22,500	26,084	11,250	12,119	13,964	2,710	0.14%
38 Water Feature Mechanical Components	2005	25	18	7	2030	30,000	36,896	21,600	23,973	12,924	1,765	0.09%
39 Pool and Hot Tub Mechanical Components	2005	25	14	11	2034	20,000	27,685	11,200	13,193	14,492	1,222	0.06%
40 Sanitary and Drainage Lines	2005	40	19	21	2044	2,200,000	4,092,648	1,045,000	1,428,575	2,664,073	108,869	5.68%
ELECTRICAL												
41 Service Distribution	2005	50	18	32	2055	147,600	380,082	53,136	85,566	294,516	7,238	0.38%
42 Power Distribution	2005	40	18	22	2045	96,000	183,946	43,200	59,943	124,003	4,799	0.25%
43 Enterphone System	2023	20	1	19	2042	70,000	122,745	3,500	4,644	118,101	5,418	0.28%
44 Security System and Cameras	2023	20	1	19	2042	30,000	52,605	1,500	1,990	50,615	2,322	0.12%
45 Fire Alarm Panel	2005	30	26	4	2027	200,000	225,102	173,333	183,970	41,132	10,055	0.52%
46 Emergency Generator	2005	40	18	22	2045	318,300	609,896	143,235	198,748	411,148	15,913	0.83%
SPECIALTY												
47 Lounge	2005	20	18	2	2025	385,000	408,447	346,500	356,973	51,474	25,545	1.33%
48 Meeting Room	2005	15	13	2	2025	210,000	222,789	182,000	187,501	35,288	17,513	0.91%
49 Multimedia Room	2005	15	11	4	2027	25,000	28,138	18,333	19,458	8,679	2,122	0.11%
50 Fitness Room	2005	15	11	4	2027	75,000	84,413	55,000	58,375	26,038	6,365	0.33%
51 Swimming Pool, Hot Tub and Steam Room	2005	15	11	4	2027	150,000	168,826	110,000	116,750	52,076	12,730	0.66%
52 Washrooms and Changerooms	2005	15	11	4	2027	5,000	5,628	3,667	3,892	1,736	424	0.02%
SITE SERVICES												
53 Softscaping	2005	50	18	32	2055	154,000	396,563	55,440	89,276	307,286	7,552	0.39%
54 Hardcaping	2005	50	18	32	2055	104,862	270,027	37,750	60,790	209,237	5,142	0.27%
55 Outdoor Fountain	2005	40	18	22	2045	750,000	1,437,078	337,500	468,303	968,775	37,495	1.96%
56 Underground Water Supply and Drainage	2005	40	18	22	2045	39,400	75,494	17,730	24,602	50,893	1,970	0.10%
57 Outdoor Lighting and Electrical	2005	40	18	22	2045	6,900	13,221	3,105	4,308	8,913	345	0.02%
58 Retaining Walls	2005	40	18	22	2045	33,300	63,806	14,985	20,793	43,014	1,665	0.09%
59 Glass Fencing and Metal Gates	2005	30	18	12	2035	175,000	249,508	105,000	125,540	123,968	9,506	0.50%
RESERVE FUND PLANNING												
Certified Reserve Fund Consultant	2023	3	0	3	2026	8,375	9,152	-	-	9,152	3,005	0.16%
TOTAL RESERVES						33,270,762	56,362,574	17,956,432	22,389,819	33,972,755	1,916,769	100%

DEFINITIONS

RESERVE COMPONENTS: Individual components within the major building systems. Note that some of these components were separated due to differences in installation dates. There may also be multiple renewals and smaller repairs included in the 30-year outlook. Minor components with insignificant renewal costs have either been combined with an allowance or not included in order to simplify financial analysis.

YEAR INSTALLED: Year the component was installed, which includes original construction or replacement. JRS assumes that all previously replaced components were new when installed, unless stated otherwise.

EXPECTED LIFE: Expected service life based on historical data and industry standards.

EFFECTIVE AGE: Assessed age of component. The default is the chronological age, but may be adjusted based on condition, location (exposure to weather and traffic), installation, maintenance, brand, model, etc.

REMAINING LIFE: Effective Age subtracted from Expected Life.

RENEWAL YEAR: Sum of current year and Remaining Life.

CURRENT REPLACEMENT COST: Cost to replace now, calculated as a product of Unit Measure and Unit Cost.

FUTURE REPLACEMENT COST: Cost to replace at expected date (including compounded inflation).

CURRENT RESERVE FUND REQUIREMENT: Amount needed in CRF now. What PRAs refer to as the FFB (Fully Funded Balance).

FUTURE RESERVE FUND ACCUMULATION: Amount of funds the Strata should have for this item if it met the current CRF requirements, given the CRF account's interest rate.

FUTURE RESERVE FUND REQUIREMENT: What the Strata's deficit or surplus will be when it is time to replace.

ANNUAL RESERVE FUND ASSESSMENT: This is derived from the standard "Future Value of an Annuity" formula. Essentially, this tells the Strata how much it needs to contribute each year to make sure this item is fully funded (i.e. no special levies, assessments or loans).

RESERVE FUND ASSESSMENT ALLOCATION: Allocated percentage of entire CRF.

CONSIDERATIONS & LIMITATIONS

The service life and estimated age of a specific reserve component is highly subjective. It should not be used for the exact timing of replacements, but as a relative timing to be used to assist in developing a financial plan. The exact timing of replacements will be influenced by several factors that are difficult to quantify. These factors include but are not limited to the following:

- Design appropriateness of reserve component
- Installation of reserve component
- Frequency and intensity of maintenance
- Frequency of use and misuse
- Exposure to traffic and weather
- Brand, quality, and model of reserve components
- Unplanned events such as earthquakes, floods and fires

It should be noted that economies of scale may be achieved if multiple projects are bundled together into larger projects, thus sharing front-end and mobilization costs.

The estimated costs should be considered as “order-of-magnitude” and used to allocate funds to undertake the work, not for accounting purposes. Actual costs will vary based on a variety of factors, which include but are not limited to the following:

- Labour and materials market conditions
- Time of the year
- Contractor availability
- Site-specific conditions
- Environment concerns
- Design specifications
- Functional obsolescence
- Project delivery method
- Tendering process
- Code upgrades
- Required emergency repairs discovered during construction
- Occupancy use and facility operations

More accurate estimates can only be determined once the project objectives are specified, and the work tendered. Project-related costs, such as consulting services, contingency allowances, front-end costs, all overhead and profit, have not been included.

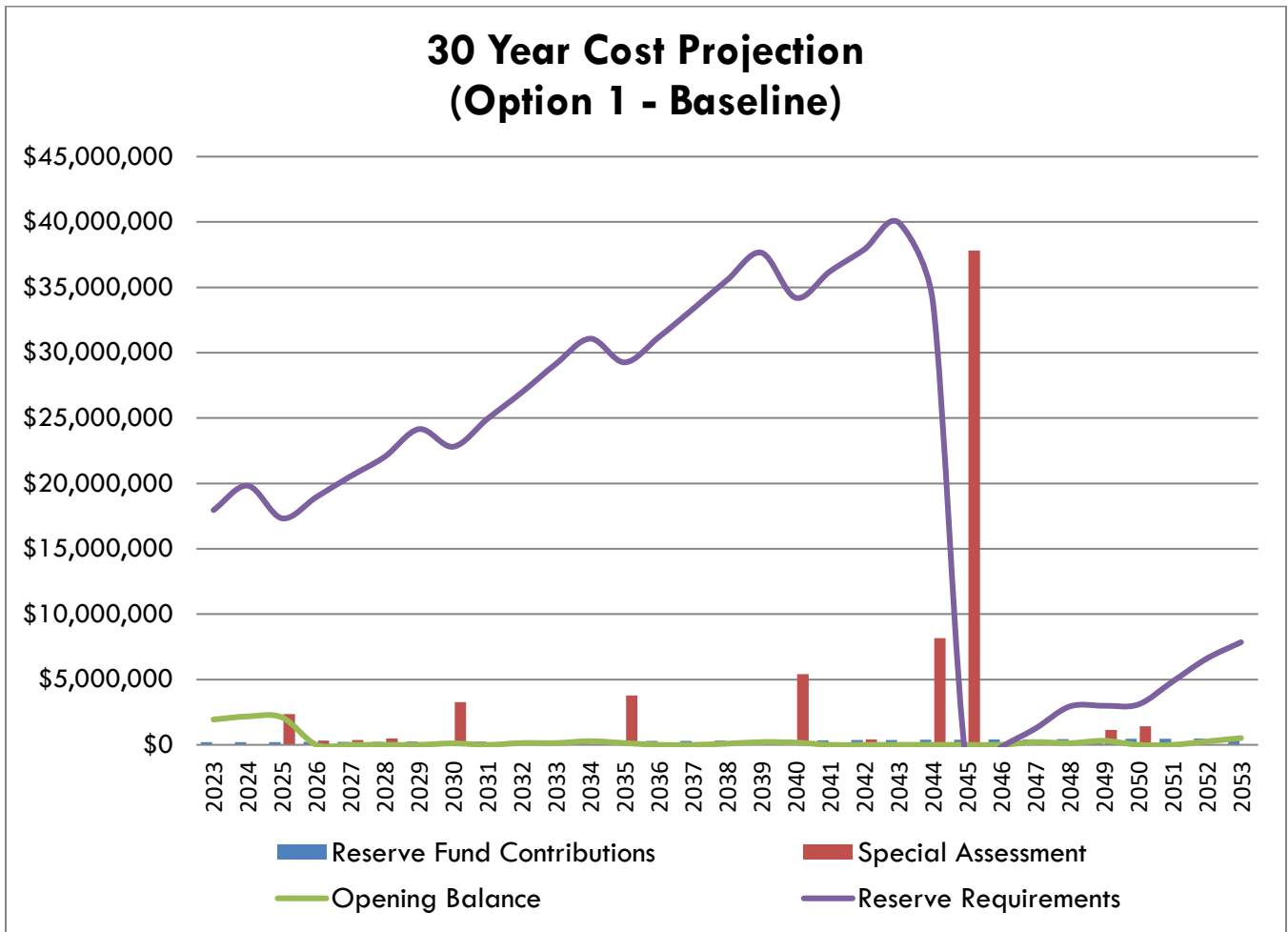


APPENDIX C

FUNDING MODELS & COST PROJECTIONS

OPTION 1 (BASELINE)

This model shows annual contributions (increasing with inflation) consistent with the status quo (current contributions) or the statutory requirement of 10% of the operating budget, whichever is higher. In this case, it is the latter. As seen below, multiple special levies will be required. From 2025 to 2053 (the end of the 30-year outlook), special levies will theoretically be required in 15 out of 30 years.

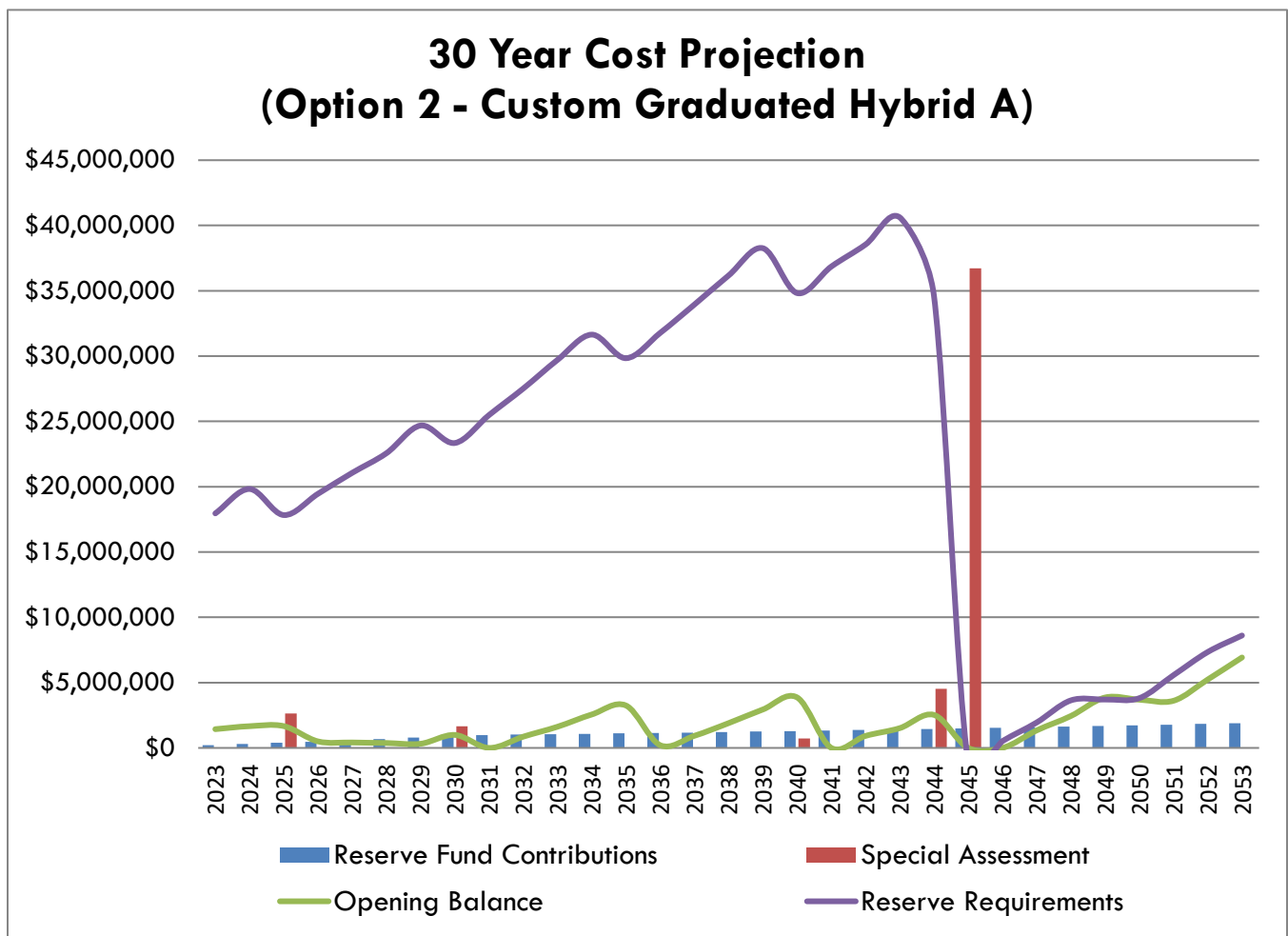


CALLISTO	YEAR 2023	YEAR 2024	YEAR 2025	YEAR 2026	YEAR 2027	YEAR 2028	YEAR 2029	YEAR 2030	YEAR 2031	YEAR 2032	YEAR 2033	YEAR 2034	YEAR 2035	YEAR 2036	YEAR 2037	YEAR 2038	YEAR 2039	YEAR 2040	YEAR 2041	YEAR 2042	YEAR 2043	YEAR 2044	YEAR 2045	YEAR 2046	YEAR 2047	YEAR 2048	YEAR 2049	YEAR 2050	YEAR 2051	YEAR 2052	YEAR 2053			
OPENING BALANCE (CRF)	1,937,241	2,171,700	2,097,862	0	0	0	0	111,752	0	137,386	137,629	280,188	137,764	0	0	89,046	211,671	171,205	0	0	0	0	0	0	209,043	128,930	309,108	0	0	258,918	518,381			
Reserve Fund Contributions	3.00%	205,400	211,562	217,909	224,446	231,180	238,115	245,258	252,616	260,195	268,000	276,040	284,322	292,851	301,637	310,686	320,007	329,607	339,495	349,680	360,170	370,975	382,105	393,568	405,375	417,536	430,062	442,964	456,253	469,940	484,039	498,560		
Special Assessment		0	0	2,362,941	330,845	372,206	493,369	0	3,259,948	0	0	0	3,765,424	124,759	0	0	0	0	5,414,431	57,121	424,056	46,534	8,164,526	37,821,808	0	0	1,149,736	1,410,491	0	0	0			
Reserve Fund Interest Income	1.50%	29,059	32,575	31,468	0	0	0	1,676	0	2,061	2,964	4,203	2,065	0	0	1,336	3,175	2,568	0	0	0	0	0	0	3,136	1,934	4,637	0	0	3,884	7,776			
TOTAL CASH RESOURCES	2,171,700	2,415,837	4,710,180	655,292	603,385	731,484	245,258	3,625,993	260,195	407,448	416,734	568,712	4,198,106	426,396	310,686	410,389	544,452	5,927,699	406,801	784,226	417,509	8,546,630	38,215,375	405,375	629,715	560,928	1,906,444	1,866,744	469,940	746,940	1,024,716			
RESERVE FUND EXPENDITURES																																		
BUILDING ENVELOPE AND STRUCTURE																																		
1 Parkade	154,800		27,500																															
2 Parkade Traffic Membrane	672,000					15,000			1,549,641																									
3 Balcony Guardrails	174,825																																	
4 Balcony & Eyebrow Membrane Assemblies	480,480		36,000	165,000					1,090,947																									
5 Deck Membrane Assemblies	465,600																																	
6 Window Wall	4,667,850		84,000		153,333			83,584		94,074			99,803					112,329		143,004				126,428						19,875,741				
7 Curtain Wall	1,429,200		18,000		63,160			20,259				21,493			22,802		24,190			84,881				92,752			98,401			104,393			6,085,544	
8 Exterior Walls - Concrete	198,450			110,000													156,834																845,002	
9 Sliding Doors	272,250																																1,159,243	
10 Swing Doors	64,800																																	
11 Townhouse Entry Doors	25,200																																59,882	
12 Main Entry Doors	8,126																																26,115	
13 Service Doors	18,450																																78,560	
14 Garage Doors	7,714			7,500							9,224																							
15 Sealant	174,640			254,754																													311,244	
16 Paint Coating	299,520			364,101																													533,805	
17 Canopies	36,000																																85,546	
18 Low Slope Roof	398,736				5,000							681,104																						
19 Below Grade Membrane	156,960			55,000																													87,200	
INTERIOR																																		
20 Lobby	1,343,565			1,492,850																														
21 Unit Entry Doors	63,000																																	
22 Hallways, Stairwells and Common Areas	1,141,768			1,317,425																														
CONVEYANCE																																		
23 Elevator - Traction	540,000					219,638								10,000																				
24 Elevator - Cab Finishes	81,000			90,000																														
MECHANICAL																																		
25 Domestic Water Pipes	780,000						200,000																											
26 Water Treatment System	72,000		84,975																															
27 Gas Pipes	4,500																																	
28 Sprinkler Pipes	34,200																																	
29 Domestic Hot Water Boiler	56,000																																	
30 Hot Water Storage Tanks	23,400																																	
31 Heating Boiler	96,000				5,000																													
32 Heat Pumps	1,071,600		95,000	97,850	100,786	103,809	106,923	110,131	113,435	116,838	120,343	123,953	127,672	131,502	135,447	139,511	143,696	148,007	152,447	157,021	161,731	166,583	171,581	176,728	182,030	187,491	193,115	198,909	204,876	211,022	217,353	223,874		
33 Miscellaneous Mechanical Components	58,500							15,000																										
34 Cooling Tower	30,000					50,000																												
35 HVAC - Building	26,667			22,000																														
36 HVAC - Parkade	34,667																																	
37 Sump Pumps	11,250																																	
38 Water Feature Mechanical Components	21,600																																	
39 Pool and Hot Tub Mechanical Components	11,200																																	
40 Sanitary and Drainage Lines	1,045,000																																	
ELECTRICAL																																		
41 Service Distribution	53,136			5,000			5,464																											
42 Power Distribution	43,200																																	
43 Interphone System	3,500																																	
44 Security System and Cameras	1,500																																	
45 Fire Alarm Panel	173,333			5,000		225,102																												
46 Emergency Generator	143,235			29,700																														
SPECIALTY																																		
47 Lounge	346,500																																	

OPTION 2 (CUSTOM – GRADUATED HYBRID A)

This model shows annual contributions with an increase to the CRF contribution by 45% in 2024, followed by 30% in 2025 and 20% from 2025 to 2030. This model also allocates \$500,000 from the current CRF to the interior projects renovations as requested by the Strata Council. As such, the CRF opening balance has been reduced from \$1,937,241 to \$1,437,241 and to account for the reduction in the interior projects renewal, the expenditures for the lobby component #20 has been reduced from 1,492,850 to \$992,850 for the year 2025.

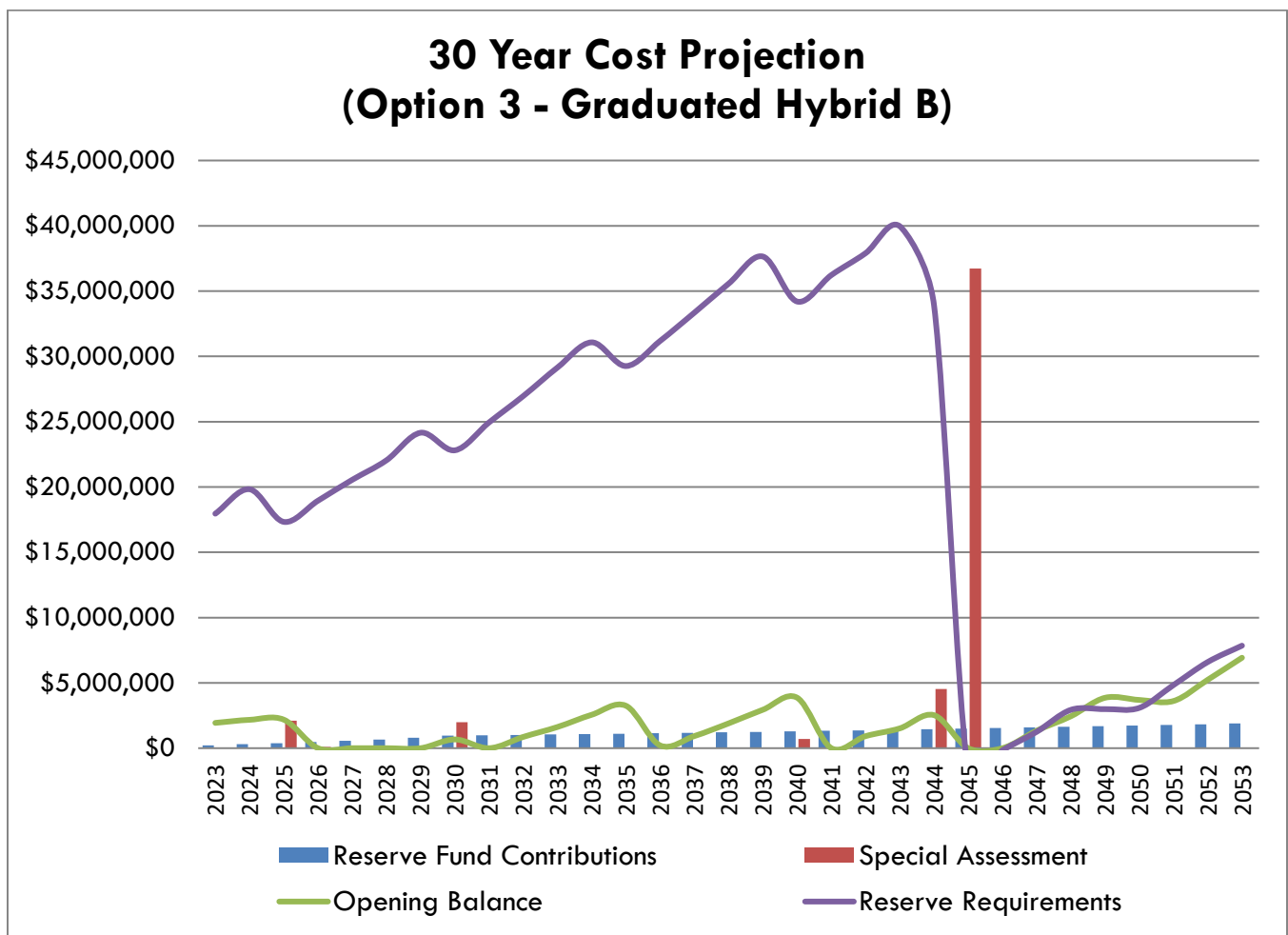
This model generally indicates that eventually (in 10 years) the CRF contribution level achieves 50% of the fully funded contribution level (\$931,919).



CALLISTO SAMPLE 30-YEAR PROJECTION	YEAR 2023	YEAR 2024	YEAR 2025	YEAR 2026	YEAR 2027	YEAR 2028	YEAR 2029	YEAR 2030	YEAR 2031	YEAR 2032	YEAR 2033	YEAR 2034	YEAR 2035	YEAR 2036	YEAR 2037	YEAR 2038	YEAR 2039	YEAR 2040	YEAR 2041	YEAR 2042	YEAR 2043	YEAR 2044	YEAR 2045	YEAR 2046	YEAR 2047	YEAR 2048	YEAR 2049	YEAR 2050	YEAR 2051	YEAR 2052	YEAR 2053		
OPENING BALANCE (CRF)	1,437,241	1,664,200	1,669,018	0	0	0	0	669,348	0	864,328	1,624,224	2,560,294	3,246,421	208,041	929,127	1,900,116	2,943,953	3,865,339	0	919,828	1,515,826	2,528,476	0	0	1,341,894	2,444,997	3,861,439	3,693,449	3,613,056	5,239,107	6,925,597		
Reserve Fund Contributions	3.00%	205,400	297,830	387,179	464,615	557,538	669,045	802,854	958,394	987,136	1,016,750	1,047,253	1,078,670	1,111,030	1,144,361	1,178,692	1,214,053	1,250,474	1,287,989	1,326,628	1,366,427	1,407,420	1,449,642	1,493,132	1,537,926	1,584,063	1,631,585	1,680,533	1,730,949	1,782,877	1,836,364	1,891,455	
Special Assessment		0	0	2,128,948	90,677	45,847	62,439	0	1,988,220	0	0	0	0	0	0	0	0	0	716,391	0	0	0	4,530,586	36,722,244	0	0	0	0	0	0	0	0	
Reserve Fund Interest Income	1.50%	21,559	24,963	25,035	0	0	0	10,040	0	12,965	24,363	38,404	48,696	3,121	13,937	28,502	44,159	57,980	0	0	13,797	22,737	37,927	0	20,124	36,675	57,922	55,402	54,196	78,587	103,884		
TOTAL CASH RESOURCES	1,664,200	1,986,993	4,210,180	555,292	603,385	731,484	802,854	3,625,993	987,136	1,834,043	2,695,840	3,677,369	4,406,147	1,355,522	2,121,766	3,142,671	4,238,586	5,927,699	1,326,628	2,300,052	2,945,984	8,546,630	38,216,375	1,537,926	2,945,782	4,113,257	5,599,894	5,479,800	5,450,129	7,154,057	8,920,936		
RESERVE FUND EXPENDITURES																																	
BUILDING ENVELOPE AND STRUCTURE																																	
1 Parkade	154,800		27,500																														
2 Parkade Traffic Membrane	672,000					15,000		1,549,641															2,414,290										
3 Balcony Guardrails	174,825																																
4 Balcony & Eyebrow Membrane Assemblies	489,480		36,000	165,000		10,000		1,090,947																									
5 Deck Membrane Assemblies	465,600										5,000		1,106,390																				
6 Window Wall	4,667,850		84,000		153,333		83,584	88,674		94,074		99,803		206,067			112,329		143,004		126,428						19,875,741						
7 Curtain Wall	1,429,200		18,000		63,160		20,259		21,493		22,802		24,190		84,881		92,752		98,401		104,393							6,085,544					
8 Exterior Walls - Concrete	198,450		110,000										156,834																				
9 Sliding Doors	272,250																																
10 Swing Doors	64,800																208,259																
11 Townhouse Entry Doors	25,200												59,882																				
12 Main Entry Doors	8,126																		26,115														
13 Service Doors	18,450																																
14 Garage Doors	7,714			7,500						9,224																							
15 Sealant	174,640			254,754									311,244																				
16 Paint Coating	299,520			364,101									533,805																				
17 Canopies	36,000												85,546																				
18 Low Slope Roof	398,736				5,000			681,104																									
19 Below Grade Membrane	156,960			55,000									87,200																				
INTERIOR																																	
20 Lobby	1,343,585		992,850																														
21 Unit Entry Doors	63,000																																
22 Hallways, Stairwells and Common Areas	1,141,768			1,317,425																													
CONVEYANCE																																	
23 Elevator - Traction	540,000				219,638						10,000			1,283,185																			
24 Elevator - Cab Finishes	81,000			90,000																													
MECHANICAL																																	
25 Domestic Water Pipes	780,000					200,000																2,975,126											
26 Water Treatment System	72,000		84,976																														
27 Gas Pipes	4,500																																
28 Sprinkler Pipes	34,200												30,000																				
29 Domestic Hot Water Boiler	56,000					81,149																											
30 Hot Water Storage Tanks	23,400					33,909							45,571																				
31 Heating Boiler	96,000			5,000		139,113																											
32 Heat Pumps	1,071,600		95,000	97,850	100,786	103,809	106,823	110,131	113,435	116,838	120,343	123,953	127,672	131,502	135,447	139,511	143,696	148,007	152,447	157,021	161,731	166,583	171,581	176,728	182,030	187,491	193,115	198,909	204,876	211,022	217,353	223,874	
33 Miscellaneous Mechanical Components	58,500						15,000						37,389					20,159															
34 Cooling Tower	30,000				50,000																												
35 HVAC - Building	26,667			22,000											75,000																		
36 HVAC - Parkade	34,667					10,000						11,593																					
37 Sump Pumps	11,250					26,084											35,054																
38 Water Feature Mechanical Components	21,600																																
39 Pool and Hot Tub Mechanical Components	11,200							36,896																									
40 Sanitary and Drainage Lines	1,045,000																																
ELECTRICAL																																	
41 Service Distribution	53,136			5,000		5,464			5,970				6,524																				

OPTION 3 (GRADUATED HYBRID B)

This model shows annual contributions with an increase to the CRF contribution by 45% in 2024, followed by 30% in 2025 and 20% from 2025 to 2030. These increases can be revised during the 3-year updates based on a number of factors: actual CRF contributions, recent upgrades, anticipated expenditures, as well as current interest and inflation factors. This model generally indicates that eventually (in 10 years) the CRF contribution level achieves 50% of the fully funded contribution level (\$987,136) and is likely the most prudent option that the general Ownership would be willing to accept. The owners can ultimately revise the percent of annual increases and time it takes to get to this value.



CALLISTO SAMPLE 30-YEAR PROJECTION	YEAR 2023	YEAR 2024	YEAR 2025	YEAR 2026	YEAR 2027	YEAR 2028	YEAR 2029	YEAR 2030	YEAR 2031	YEAR 2032	YEAR 2033	YEAR 2034	YEAR 2035	YEAR 2036	YEAR 2037	YEAR 2038	YEAR 2039	YEAR 2040	YEAR 2041	YEAR 2042	YEAR 2043	YEAR 2044	YEAR 2045	YEAR 2046	YEAR 2047	YEAR 2048	YEAR 2049	YEAR 2050	YEAR 2051	YEAR 2052	YEAR 2053			
OPENING BALANCE (CRF)	1,937,241	2,171,700	2,184,130	0	0	0	0	669,348	0	864,328	1,624,224	2,560,294	3,246,421	208,041	929,127	1,900,116	2,943,953	3,965,339	0	919,828	1,515,826	2,528,475	0	0	1,341,894	2,444,997	3,861,439	3,693,449	3,613,056	5,239,107	6,925,597			
Reserve Fund Contributions	3.00%	205,400	297,830	387,179	464,615	557,538	669,045	802,854	958,394	987,136	1,016,750	1,047,253	1,078,670	1,111,030	1,144,361	1,178,692	1,214,053	1,250,474	1,287,989	1,326,628	1,366,427	1,407,420	1,449,642	1,493,132	1,537,926	1,584,063	1,631,585	1,680,533	1,730,949	1,782,877	1,836,364	1,891,455		
Special Assessment		0	0	2,106,108	90,677	45,847	62,439	0	1,988,220	0	0	0	0	0	0	0	0	0	716,391	0	0	0	4,530,586	36,722,244	0	0	0	0	0	0	0	0		
Reserve Fund Interest Income	1.50%	29,059	32,575	32,762	0	0	0	0	10,040	0	12,965	24,363	38,404	48,696	3,121	13,937	28,502	44,159	57,980	0	13,797	22,737	37,927	0	20,124	36,675	57,922	55,402	54,196	78,587	103,884			
TOTAL CASH RESOURCES		2,171,700	2,502,105	4,710,190	555,292	603,385	731,484	802,854	3,625,993	987,136	1,834,043	2,695,840	3,677,369	4,406,147	1,355,522	2,121,766	3,142,671	4,238,586	5,927,699	1,326,628	2,300,052	2,945,984	8,546,630	38,216,375	1,537,926	2,945,782	4,113,257	5,599,894	5,479,800	5,450,129	7,154,057	8,920,936		
RESERVE FUND EXPENDITURES																																		
BUILDING ENVELOPE AND STRUCTURE																																		
1 Parkade	154,800		27,500																															
2 Parkade Traffic Membrane	672,000																																	
3 Balcony Guardrails	174,825																																	
4 Balcony & Eyebrow Membrane Assemblies	480,480																																	
5 Deck Membrane Assemblies	465,600																																	
6 Window Wall	4,667,850																																	
7 Curtain Wall	1,429,200																																	
8 Exterior Walls - Concrete	198,450																																	
9 Sliding Doors	272,250																																	
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13 Service Doors	18,450																																	
14 Garage Doors	7,714																																	
15 Sealant	174,640																																	
16 Paint Coating	299,520																																	
17 Canopies	36,000																																	
18 Low Slope Roof	398,736																																	
19 Below Grade Membrane	156,960																																	
INTERIOR																																		
20 Lobby	1,343,585																																	
21 Unit Entry Doors	63,000																																	
22 Hallways, Stairwells and Common Areas	1,141,768																																	
CONVEYANCE																																		
23 Elevator - Traction	540,000																																	
24 Elevator - Cab Finishes	81,000																																	
MECHANICAL																																		
25 Domestic Water Pipes	780,000																																	
26 Water Treatment System	72,000																																	
27 Gas Pipes	4,500																																	
28 Sprinkler Pipes	34,200																																	
29 Domestic Hot Water Boiler	56,000																																	
30 Hot Water Storage Tanks	23,400																																	
31 Heating Boiler	96,000																																	
32 Heat Pumps	1,071,600																																	
33 Miscellaneous Mechanical Components	58,500																																	
34 Cooling Tower	30,000																																	
35 HVAC - Building	26,667																																	
36 HVAC - Parkade	34,667																																	
37 Sump Pumps	11,250																																	
38 Water Feature Mechanical Components	21,600																																	
39 Pool and Hot Tub Mechanical Components	11,200																																	
40 Sanitary and Drainage Lines	1,045,000																																	
ELECTRICAL																																		
41 Service Distribution	53,136																																	
42 Power Distribution	43,200																																	
43 Interphone System	3,500																																	
44 Security System and Cameras	1,500																																	
45 Fire Alarm Panel	173,333																																	

APPENDIX D

CASH FLOW TABLE

RESERVE FUND – CASH FLOW TABLE

The Cash Flow Table presented below is for JRS’ recommended Graduated Hybrid B Funding Model. It demonstrates estimated cash flow over a 30-year period as the funding model is applied, including opening balance, of reserve fund contributions and expenditures as major components are expected to be replaced.

YEAR	OPENING BALANCE	RECOMMENDED ANNUAL CONTRIBUTION	SPECIAL ASSESSMENT	ESTIMATED INFLATION-ADJUSTED EXPENDITURES	ESTIMATED INTEREST EARNED 1.5%	% INCREASE IN RECOMMENDED ANNUAL CONTRIBUTIONS	CLOSING BALANCE
2023	1,937,241	205,400	-	-	29,059	--	2,171,700
2024	2,171,700	297,830	-	317,975	32,575	45.00%	2,184,130
2025	2,184,130	387,179	2,106,108	4,710,180	32,762	30.00%	0
2026	0	464,615	90,677	555,292	-	20.00%	0
2027	0	557,538	45,847	603,385	-	20.00%	0
2028	0	669,045	62,439	731,484	-	20.00%	0
2029	0	802,854	-	133,506	-	20.00%	669,348
2030	669,348	958,384	1,988,220	3,625,993	10,040	19.37%	0
2031	0	987,136	-	122,808	-	3.00%	864,328
2032	864,328	1,016,750	-	269,818	12,965	3.00%	1,624,224
2033	1,624,224	1,047,253	-	135,546	24,363	3.00%	2,560,294
2034	2,560,294	1,078,670	-	430,948	38,404	3.00%	3,246,421
2035	3,246,421	1,111,030	-	4,198,106	48,696	3.00%	208,041
2036	208,041	1,144,361	-	426,396	3,121	3.00%	929,127
2037	929,127	1,178,692	-	221,640	13,937	3.00%	1,900,116
2038	1,900,116	1,214,053	-	198,718	28,502	3.00%	2,943,953
2039	2,943,953	1,250,474	-	373,247	44,159	3.00%	3,865,339
2040	3,865,339	1,287,989	716,391	5,927,699	57,980	3.00%	0
2041	0	1,326,628	-	406,801	-	3.00%	919,828
2042	919,828	1,366,427	-	784,226	13,797	3.00%	1,515,826
2043	1,515,826	1,407,420	-	417,509	22,737	3.00%	2,528,475
2044	2,528,475	1,449,642	4,530,586	8,546,630	37,927	3.00%	0
2045	0	1,493,132	36,722,244	38,215,375	-	3.00%	0
2046	0	1,537,926	-	196,331	-	3.00%	1,341,594
2047	1,341,594	1,584,063	-	500,785	20,124	3.00%	2,444,997
2048	2,444,997	1,631,585	-	251,818	36,675	3.00%	3,861,439
2049	3,861,439	1,680,533	-	1,906,444	57,922	3.00%	3,693,449
2050	3,693,449	1,730,949	-	1,866,744	55,402	3.00%	3,613,056
2051	3,613,056	1,782,877	-	211,022	54,196	3.00%	5,239,107
2052	5,239,107	1,836,364	-	228,460	78,587	3.00%	6,925,597
2053	6,925,597	1,891,455	-	764,426	103,884	3.00%	8,156,510

APPENDIX E

GLOSSARY OF TERMS

GLOSSARY OF TERMS

ANNUNCIATOR PANEL:

A central fire alarm display panel usually located in close proximity to the building entrance. It is used to allow for easy identification of fire hazard areas by fire rescue personnel during an emergency and is linked with fire sensor devices throughout the building. It is a requirement in many Canadian bylaws and requires periodic testing, which can be performed in conjunction with other fire protection equipment.

ASBESTOS:

A natural fibrous mineral that has carcinogenic and other negative health properties. It was heavily used in building construction in the early to mid-twentieth century due to its strength, corrosion, and fire-resistant properties. In the late 20th century, the carcinogenic effects of asbestos were better understood, and it was then banned from use in developed countries in the 1980s and 1990s. Typically, buildings built earlier than 1990 should have asbestos testing performed, if interior finishes are disturbed.

BACKFLOW PREVENTER VALVE:

A mechanical piping component that is used to prevent backflow of fluid (fluid flowing opposite to intended direction). Its use may be required by municipal regulations and can prevent contaminants from entering potable water. The City of Vancouver requires this device for use in "larger complexes" to prevent backflow into potable water from fire sprinkler systems, underground irrigation systems, and commercial/residential boiler systems with and without antifreeze. NFPA 25 (Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems) includes a specification for testing of fire sprinkler system backflow. These devices require annual testing according to the Vancouver Water Works Bylaw 4848.

BASELINE FUNDING:

A CRF funding regime that typically represents how much the Strata Corporation is currently contributing or whatever the statutory minimum is, whichever is higher. This usually describes a CRF growth strategy that tries to keep contributions low or similar to current or minimum statutory requirements, usually with minor annual adjustments due to inflation. This funding strategy will allow for minimal disturbance to owners' annual Contingency Reserve Fund (CRF) contributions but will likely lead to frequent special assessments to fund larger future projects (dependent on the health of the current CRF balance).

BELOW-GRADE MEMBRANE:

A waterproofing material that is applied to surfaces that are below grade, often buried under a nominal amount of landscaping ("at-grade" waterproofing is often at a trafficable surface or at close proximity to a trafficable surface). The material is designed to prevent water ingress into the substrate (e.g., concrete wall) where hydrostatic pressure is expected. A common example of a below grade membrane is 2-ply SBS (Styrene Butadiene Styrene) over an underground parkade roof.

BENCHMARK ANALYSIS:

Backbone of the Depreciation Report's financial analysis. It consists of an asset inventory along with information regarding installation dates, typical life expectancies, effective ages, remaining life, projected future renewal dates, estimated current and future costs for renewal as well as other CRF related financial information, including the annual reserve fund assessment values.

BOILER:

A mechanical vessel designed for heating fluid (air or water) for the purpose of air or domestic water distribution. A boiler is often used for heating the building, where, for example, the heated medium is pumped to radiant heaters and its energy is dissipated to its surroundings.

BOOSTER PUMP:

A mechanical device used to increase/maintain the pressure or flow rate of a fluid. Booster pumps are not typically intended to be used independently but as an auxiliary unit to a usually larger and more complex pumping device. Booster pumps are commonly used in mechanical sprinkler systems in buildings and for domestic water use in high-rise buildings.

BUILDING CONDITION ASSESSMENT:

A technical review of all the physical assets of a property and often includes associated costs of short-term renewals. It is similar to a Depreciation Report, except technically more detailed and without the cost projections and cash flow tables associated with long term capital asset planning.

BUILDING ENVELOPE:

The shell of the building that separates the interior environment from the exterior environment. Its purpose is to protect the interior space from environmental and manmade elements. Parts of the building envelope include windows, walls, roofs, and floors. Other noteworthy components can include attics, parkades, garages, carports and balconies.

BUILDING ENVELOPE CONDITION ASSESSMENT:

Unlike Depreciation Reports/Reserve Fund Studies or Building Condition Assessments, this type of assessment focuses only on building envelope systems/components and at a greater detail, often including interior and/or exterior exploratory openings, moisture probes and other analytical methods/tools to diagnose the building envelope's condition in greater detail.

BYLAWS:

Sets of rules, regulations or subsidiary laws imposed onto a community, group, or organization by consensus or legislation and registered in the Land Title Office. All strata corporations should have a set of bylaws to address specific concerns where the standard Strata Property Act and Regulation are not sufficient. It should be noted that not all rules voted into the bylaws may be legal and should be reviewed by legal professionals.

CANOPY:

A physical overhanging component commonly installed over fenestrations such as windows and doors. It is used to deflect precipitation and/or provide shading for users.

CAPITAL RESERVE PLAN:

A formalized plan/strategy that compiles all major assets of a property and projects what major remedial actions may be required along with their costs. The term is used interchangeably with Depreciation Report (used mainly in BC), Reserve Study and Reserve Fund Study and is used more often with Housing Co-ops and commercial property.

CASH FLOW METHOD:

A CRF contribution strategy or option where contributions are designed to offset the variable annual expenditures from the CRF. The CRF is considered one large pool of money, where annual contributions (or special levies) offset the scheduled CRF expenditures from the fund, regardless of what the money is intended for on that particular year.

CASH FLOW TABLE:

A summary table in a depreciation report or reserve fund study that summarizes the pertinent and more practical financial values within a projected outlook (e.g., balances, recommended annual contributions, possible special assessments, estimated expenditures, estimated interest earned).

CEDAR SHAKES:

A thin tapered piece of cedar that is often used in an offset layered pattern such as roofing or cladding. Shakes are similar in appearance to shingles, but have differences in application, surface, and dimension. Compared to shingles, shakes are slightly thicker (1/2" to 3/4" at butt end) and have a more irregular surface finish causing them to not lay as flat after installation. Because of this, roofing shakes typically utilize felt paper between courses.

CEDAR SHINGLES:

A thin tapered piece of cedar that is often used in an offset layered pattern such as roofing or cladding. Shingles are similar in appearance to shakes, but have differences in application, surface, and dimension. Compared to shakes, shingles are slightly thinner (3/8" to 1/2" at butt end) and have a more precise surface finish. Shingles do not typically have felt interweaving.

CHILLER SYSTEM:

A mechanical system that is used to remove heat. It uses either vapour-compression or absorption refrigeration cycle processes to cool a fluid, which is then run through further equipment (e.g., heat exchanger) to remove heat from a space or equipment.

CHLORINATOR:

A mechanism used to treat a substrate, most commonly water, with chlorine or a chloride compound for the purpose of disinfection.

CIRCUIT BREAKER:

An electrical device that is composed of mechanical switches, which are designed to automatically switch off in case of high current flow. The equipment is used for safety purposes and is usually required by law.

CLADDING:

The exterior material or component of a building (typically at walls) designed to provide a deflection mechanism for weather precipitation and the first line of defense against the environment.

CONDOMINIUM BOARD:

The condominium board is usually elected by, and made up of, individual condominium or property owners. The board meets regularly to handle policy, finances, and make decisions about the upkeep and repair of the common property. In BC, these are referred to as strata councils.

CONTINGENCY RESERVE FUND:

A fund or financial account used to pay for asset repairs, rehabilitation work, renovations and renewals that occur less often than once per year. The fund may be built up over time through annual strata fees so that future common expenses can be paid for partially or fully from the fund.

CONVEYANCE:

Part of the building that transports (vertically or horizontally) supplies and/or building occupants from one point to another (e.g., elevators, escalators, wheelchair lifts).

COOLING TOWER:

A type of mechanical equipment that rejects waste heat to the atmosphere by way of cooling water. This type of heat rejection is "evaporative", where it allows a small portion of the water to evaporate into a moving air stream and provide significant cooling to the rest of that water stream. Common applications are found in air conditioning, manufacturing and electric power generation.

COST PROJECTION:

For Depreciation Reports and Reserve Studies, the cost projections relate to the future costs of asset renewals within a given timeframe.

CPI (CONSUMER PRICE INDEX):

An indicator of changes in consumer prices experienced by Canadians. It is obtained by comparing, over time, the cost of a fixed basket of goods and services purchased by consumers. This value should not be mistaken for the construction inflation rate and should not be used for projecting future asset renewal costs in a Depreciation Report or Reserve Study.

DECK:

A deck is a low slope surface capable of supporting weight, similar to a floor, but typically constructed outdoors, often elevated from the ground, and usually connected to a building. More specifically, the term deck refers to a roof over living space and may be designed to be used in a fashion similar to a balcony.

DEPRECIATION REPORT UPDATES:

An update to a previous Depreciation Report, typically performed by the same company. This includes an update in interest and inflation values, history of CRF transactions and asset renewals, another interview with building representatives and in most jurisdictions, a site visit. Currently, strata corporations in BC are required to obtain depreciation report updates every three years unless voted down by a 3/4 vote and require a site visit. The updates, if performed by the same company, are usually much cheaper than the previous Depreciation Report.

DISCONNECT SWITCHES:

A disconnect switch is a piece of mechanical equipment that has the capability to interrupt power to an electrical circuit or to a group of electrical circuits. Disconnect switches are used in a wide variety of settings, and are primarily employed as safety devices, which de-energize circuits so that people can work on them safely.

DISTRIBUTION PANELS

A distribution panel is also known as a breaker panel. It consists of circuit breakers, fuses, and switches. The panel is connected to the main feeder lines and branch lines and is used to distribute electricity within a building.

DOMESTIC WATER PIPE ASSESSMENT

This is a comprehensive assessment conducted on the potable water and pipes to review the current condition of the domestic water distribution system. Information including, but not limited to, water quality, corrosion, leakage due to pitting, pipe breakage and serviceability, will be documented such that informed decisions regarding repair, rehabilitation or replacement of the pipelines can be made.

DUE DILIGENCE REPORT:

These reports typically refer to technical reviews or condition assessments on buildings that are being re-financed or changing possession. The interested party commissions the due diligence report from building/construction professionals/consultants in order to ascertain any potential financial liabilities.

EAVE:

The bottom horizontal edge of a roof that overhangs the face of a wall. The primary function of eaves is to keep rainwater off the windows and walls and to prevent the ingress of water at the junction where the roof meets the wall. The eaves may also protect walkways around a building, prevent erosion of the footings, and reduce splatter on the walls.

EFFECTIVE AGE:

The age of a component or asset based on its condition. This is usually chronological by default (time since installation), but may be younger or older, depending on the asset's condition.

ELEVATOR MODERNIZATION:

This typically refers to overhauling the elevator for most, if not all, of the mechanical and electrical components, as well as the interior finishes, with the exception of the structural cab.

EMERGENCY GENERATOR:

Equipment that uses fuel to produce emergency electricity when the electricity source from the centralized electrical grid is cut off, interrupted, or reduced. Emergency generators are often installed in buildings and are dormant when the building is obtaining electricity from the central grid.

EMERGENCY LIGHTING:

A battery-packed or generator-sourced lighting device that switches on automatically when a building experiences a power outage. Emergency lights are standard in new commercial and high occupancy residential buildings.

ENTERPHONE:

A standalone voice communication system for use within a building or small collection of buildings, functioning independently of the public telephone network. Enterphones are generally mounted permanently in buildings and can incorporate connections to public address loudspeaker systems, walkie-talkies, telephones, and other intercom systems. Some intercom systems incorporate control of devices such as signal lights and door latches.

EXPANSION TANK:

A mechanical vessel that is typically filled with air and is used to regulate water pressure by allowing the flow of expanding water into the tank and release pressure within the system. Expansion tanks are typically installed as part of the water supply line to the water heater. When the water temperature within the water heater rises, the water will expand due to its incompressibility.

FASCIA:

Usually consists of long, straight boards (e.g., wood or fibre cement) that run along the lower edge of a roof or balcony. Roof fascias are usually fixed directly to the trusses and act as backing for gutters.

FIRE PANELS:

A control unit for a building's fire alarm system. The purpose of this panel is to monitor fires, alert people to the location of a fire and supply power to fire detectors. There are two categories of fire alarm panels: conventional and addressable. In conventional fire alarm panels, a series of circuits link all the fire sensors to the central panel. The building is divided into zones, to which devices are wired accordingly. Addressable fire alarm panels have the system wired in one or more loops so that a fire can be pinpointed to its exact location.

FLASHING:

Usually refers to thin material (most often metal or polymeric) installed to deflect water away from a structure, joint, fenestration, etc. It often plays a key role in the weather resistant barrier (WRB) system.

FOB ACCESS:

A small security hardware device with built-in authentication, used to control, monitor, and secure access to certain areas. In buildings, key fobs can be used to access lobby doors, storage areas, fitness rooms, pool rooms, etc. The FOB communicates via a reader pad with a central server for the building to grant access to a particular area within customizable durations.

FULLY FUNDED OR FULL FUNDING:

A funding option proposed in most depreciation reports that allow for all projected expenses to be paid completely by the CRF with no projected special levies for the entire 30-year scope of the report. This funding strategy is usually impractical and requires substantial increases to CRF contributions and subsequently the strata fees. In other provinces where reserve planning has been legislated for much longer (e.g., Alberta), fully funded models are reasonable and attainable goals.

FUNDING MODELS:

Funding models utilize mathematical framework to establish appropriate funding strategies towards the proper maintenance and asset renewal of a property. These models incorporate various parameters such as inflation rates, interest rates, predicted special levies, as well as allowances for targeted work and consulting.

The purpose of proposing funding models is to quantify the level of unfunded liabilities and empower the building owners with information to make informed financial decisions. The Strata Property Regulation in BC requires that Depreciation Reports include at least 3 funding models.

FUSE:

A type of low resistance resistor that acts as a sacrificial device to provide over current protection of either the load or source circuit. The primary component is a metal wire or strip that melts when too much current flows through it, interrupting the circuit that it connects. Short circuits, overloading, mismatched loads, or device failure are the prime reasons for excessive current.

GEAR TRACTION ELEVATOR:

An elevator that is driven by an AC or DC electric motor using a worm-and-gear-type reduction unit, which turns the hoisting sheave. While the lift rates are slower than in a typical gearless elevator, the gear reduction offers the advantage of requiring a less powerful motor to turn the sheave.

GRADUATED HYBRID:

A type of funding model that combines the Baseline and Fully Funded models to achieve a balanced approach and gradual increase in CRF contributions. It starts with the current contribution levels and eventually reaches a 50% to 75% fully funded contribution level (this target percentage can be adjusted based on the financial condition of the property). Special levies may still occur but at smaller quantities and less frequently than the baseline model. This funding strategy allows for a more customized and pragmatic funding plan.

HEAT PUMP:

A mechanical device that uses electrical energy to extract heat from an area of lower heat content and transfer it to an area of higher heat content. A refrigerator is a common example of a heat pump device.

HEATING VENTILATION AIR CONDITIONING (HVAC):

Refers to either a professional field, area of study, or type of mechanical system/equipment. The HVAC of a building focuses on using mechanical systems and design to maintain reasonable air quality and interior environmental comfort through heating, ventilation, and air conditioning.

HOSE BIB:

An outdoor water threaded faucet, protruding from a building, also known as a wall hydrant. In colder climates, exterior house bibs should be installed in line with an interior wall (thermal barrier) such that it can be recessed within the wall to provide freezing protection or protected with exterior grade foam insulation.

HOT WATER STORAGE TANKS:

A mechanical vessel, such as an insulated tank, that is used for storing hot water for domestic use. Hot water tanks may have a built-in gas or oil burner system, electric immersion heaters, or may use an external heat exchanger to heat water from another energy source.

HOUSING CO-OP:

A legal entity, usually a corporation, which owns real estate, consisting of one or more residential buildings, where individual parties own a share instead of equity in the property. There are two types of housing co-operatives: non-profit and for-profit. In BC, there are also government subsidized and non-subsidized housing co-ops.

HYDRAULIC ELEVATOR:

An elevator that is powered by a piston that travels inside a cylinder. An electric motor pumps oil into the cylinder to move the piston, which then lifts the elevator cab. Electrical valves control the release of the oil for a gentle descent. They do not use large overhead hoisting machinery the way gear traction systems do.

INFLATION RATE:

A sustained increase in the general price level of materials and/or services in an economy over a period of time. Also defined as the percentage rate of change of a price index over time. For renewal costs, a construction inflation rate is used, rather than the CPI.

INFRARED (IR):

A type of electromagnetic radiation that has a wavelength greater than the red end of the visible light spectrum. It is invisible to the human eye. All objects on earth emit infrared radiation as heat, which is detectable by electronic sensors. IR cameras are used to assist with air leakage and discontinuities in thermal insulation.

INSPECTION:

Refers to a highly detailed and systematic review of a property with a well-defined scope of work and objective (e.g., roof, home). Most professional engineers do not provide "inspections," instead, provide assessments, observations, or technical reviews of buildings and/or targeted systems or equipment.

INTEREST RATE:

Also known as the annual percentage rate of the principal, is an amount that is charged to borrowers for the use of money from the lenders. It may be understood as the cost of borrowing money. Rates can change by lenders, government policies as well as inflation.

IRRIGATION:

The application of water to vegetation by means of pipes, sprinklers, ditches, or streams. It may refer to as a mechanical system (often automated) installed on a property for the purpose of watering trees, grass, or plants.

LIFE CYCLE ANALYSIS (LCA):

LCA is often applied to construction products, building assemblies, whole structures, building portfolios and highways. It is often referred to as cradle-to-grave or cradle-to-cradle analysis and is essential for making green decisions, whether in product manufacturing or in building design. It is life cycle thinking applied to a product: what is involved to make a product and transport it to an installation site; what inputs (e.g. raw materials) and outputs (e.g. products, waste) will occur related to making and using the product over its expected life as well as what will happen to the product when it is no longer needed.

MAINTENANCE MANUAL:

A report that acts as an information source, which includes building envelope assemblies, warranties, and guides end users in the understanding a building. The manual should define the building construction and its systems, along with the processes and procedures required for it to be maintained efficiently and safely. The manual should also provide recommendations, requirements and checklists for the proper maintenance and long-term performance of the respective system or equipment.

MAINTENANCE REVIEW:

A report that consists of a site visit to a property and typically a review of the building envelope systems and components, which comments on the effectiveness of current maintenance processes and procedures and offers recommendations for further maintenance actions.

MAJOR MAINTENANCE:

Maintenance is casually defined in the Strata Property Act as actions performed more often than once a year. Major maintenance consists of action items such as painting and sealant renewals, that are likely to occur less frequently than once a year and if not performed, have potentially significant financial and physical impact to the buildings.

MAKE UP AIR UNIT:

A piece of equipment used to accept, filter, and regulate airflow and distribute it throughout the building as part of the HVAC system. Usually contains a blower, heating or cooling elements, and filter racks.

MEMBRANE:

A layer or multiple layers of material or a combination of materials that serve as a moisture barrier or as an air and vapour barrier as well. An example would be a balcony or deck membrane (e.g., PVC or polyurethane), which protects the substrate below from water ingress. Other common membranes consist of asphalt, rubber, TPO and polyolefin.

MIXING VALVE:

A mechanical device that blends hot and cold water together to ensure constant safe outlet temperatures. The storage of water at a high temperature limits the possible breeding ground for bacteria, and the use of a mixing valve allows for water to be stored at high enough temperatures and still be used safely.

MOULD:

A form of organic growth, such as fungi, that may grow on construction materials. Mould needs three things to be created and sustain growth: food source, water, and suitable temperature. It can be any colour and can contribute to poor indoor air quality, adverse health effects, and material deterioration. It reproduces by releasing small "spores" into the air that can lay dormant for long periods of time.

OBsolescence (TYPES: FUNCTIONAL, AESTHETIC, ECONOMIC):

The state at which a piece of equipment, service, or practice is no longer needed even though it may still be in good working order. Obsolescence frequently occurs because a replacement has become available that has, in sum, more advantages than the inconvenience related to repurchasing the replacement.

PARKADE VESTIBULE:

A parkade vestibule is a lobby, entrance hall, or passage that serves to connect the parkade space to the rest of the building interior.

PATIO:

A ground level area intended for recreational use, commonly adjoining to a residence. Patios can be paved (e.g., stone, concrete, brick, etc.) or built up from the ground (e.g., wood) and not typically suspended or cantilevered from a building. Balconies are often suspended or cantilevered, and roof decks are over living space.

PAVER:

A cementitious/masonry unit commonly used at patios, roof decks, or walkways to provide a walking/traffic surface, a drainage pathway, and/or protection for underlying membranes/surfaces. Pavers are often made from concrete, stone, or brick.

PERCENT FUNDED:

The ratio, at a particular point of time (typically the beginning of the fiscal year), of the actual or projected reserve fund balance to the accrued reserve fund balance, expressed as a percentage.

PRESSURE REDUCING VALVE (PRV):

A mechanical device used in plumbing to provide a lower pressure fluid output from a higher-pressure fluid input, with the purpose of preventing damage that high pressure could cause to lines and plumbing devices on the output side. In many municipalities, supply water pressure is higher than what is recommended for domestic water lines (in some cases supply mains can exceed 200 psi). Many plumbing codes require PRVs where supply pressures exceed 80 psi.

RAKE:

The sloped edge of a roof at the ends or sides of a building. Rakes typically do not consist of an overhang, but should as it greatly assists in water deflection, especially if window penetrations exist below.

REAL ESTATE INSTITUTE OF CANADA (REIC):

An organization that provides education and designation programs for real estate industry professionals in Canada.

RECIRCULATION PIPE:

Recirculation pipes are used to circulate hot water continuously so that plumbing fixtures (e.g., faucet) will better provide hot water on demand.

RESERVE FUND STUDY:

Also known as a depreciation report, a report that reviews the current financial well-being of a property as well as provides a visual assessment of the quantities and conditions of common assets of the property and estimates whether there are sufficient funds available for anticipated major repairs or replacement of these common assets in the future. This report assists in long term financial planning; it strives to examine all the systems and other physical aspects and gives a reasonable expectation as to when they will need to be replaced or have non-routine repairs, and how much this will cost at that projected time in the future. BC is one of the only jurisdictions in North America that uses the term "Depreciation Report."

ROCK BALLAST:

Part of an assembly that consists of coarse aggregate (rocks or gravel) that is typically used to protect or hold something in place and/or provide a drainage plane. Rock ballasts are used frequently on built-up or inverted, low-slope roofing systems.

ROOFING CONTRACTORS ASSOCIATION OF BC (RCABC):

An organization that includes professional roofing contractors, manufacturers, and suppliers, and offers training, support, and leadership to its members.

SAND FILTER:

A device that uses sand as a natural filtration substance to purify water by removing suspended solids. This type of filter is environmentally friendly and commonly used in swimming pools. Regular maintenance (via backwashing or reversing the water flow through the filter) should be performed to maintain good water filtration.

SBS MEMBRANE:

A type of low-slope roofing membrane (styrene-butadiene-styrene) otherwise known as modified bitumen, made from asphalt and a variety of rubber modifiers and solvents. Techniques or methods to install SBS roofing membrane consist of heat applied, hot-mopped, mechanically fastened, and cold-applied adhesives.

SKYLIGHT:

A type of fenestration installed in a roof or ceiling (typically at 45 degrees or smaller), fitted with safety glass (i.e. tempered, laminated or wire reinforced) to allow for the transmission of daylight.

SOFFIT:

A flat material installed under roof overhangs, or balcony joist spaces. It may be used for aesthetic purposes but may also be useful in preventing unwanted animal habitation. Soffits are often perforated or have vents installed to allow for venting of the enclosed space. Soffits can be made from a variety of materials such as aluminum, vinyl, fiber cement, wood, steel, etc.

SPECIAL LEVY OR ASSESSMENT:

An amount of money that owners are required to provide to their Strata Corporation, in addition to their normal strata fees, to pay for essential items such as major maintenance, emergency repairs, legal fees/costs, renewal and rehabilitation of common assets, when there is a shortfall in available funds normally used for these types of expenses.

STANDPIPE:

A standpipe is part of a series of pipes that transport water to hose valves located within the building. It is designed to provide constant water flow for fire protection purposes and sometimes serves as a backup system for buildings with sprinklers.

STATUTORY FUNDING:

The minimum CRF funding level that is required to meet the statutory requirements for strata corporations. In BC, the minimum statutory CRF contribution is 10% of the strata corporation's operating budget, unless the CRF balance is at 25% of the operating budget. This is misleading as it indicates that 10% is sufficient when it typically is not.

STRATA CORPORATION:

A legal entity created by the deposit of a strata plan in the Land Title Office. Its purpose is to divide a building (or buildings) and/or a parcel of land into separate components individually owned where common components are owned by all of the owners. The owners of the strata lots are the members of the strata corporation. An elected strata council governs and maintains the strata corporation.

STRATA PLAN:

A strata plan outlines the areas, boundaries, and dimensions of the strata lots on a horizontal plane by reference to survey makers and not by reference to the floors, walls or ceilings of a building. This document is registered in the Land Title Office.

STRATA PROPERTY ACT:

The Strata Property Act came into effect on July 1, 2000, (replacing the Condominium Act) and provides a legal framework for all creations and operations of strata corporations in British Columbia. It contains pertinent information affecting strata corporations. Owners and residents in all strata properties must comply with the Strata Property Act, which requires every strata corporation to maintain property insurance on the buildings on a strata plan and to maintain liability insurance. Under the Strata Property Act, a strata corporation has a Schedule of Standard Bylaws, which governs the use, safety and condition of common property and common assets.

STRATA PROPERTY REGULATION:

Regulations are part of the Strata Property Act and are made by the Lieutenant Governor in Council. Along with the Strata Property Act, the Regulations are the applicable and practical component that allows for specific governance of a strata corporation's operation.

SUMP PUMP:

A pump used to remove water that has accumulated in a water collection sump basin commonly found in the lower sections of buildings. Sump pumps are especially used where the water table is above the foundation of the home. They will divert the water away from a house to a location that can withstand and deal with water flow such as a storm drain.

THEORETICAL FULLY FUNDED:

This refers to the annual allocation of funds that is required so that the owners will theoretically never require a special levy. In BC, where CRF balances and contributions (as well as strata fees) are relatively lower than the rest of Canada, it is often an unrealistic target for the short term but is useful to reference when setting targets and financial goals.

THRESHOLD FUNDING:

Threshold funding represents a reference funding level where the contingency reserve contribution is set at a predetermined amount.

TRANSFORMER:

An electrical device that converts electricity of one voltage into another. It does so by increasing or reducing the voltage of an alternating current.

TRIM:

Generally, a strip of material used to help transition between different underlying substrates or cladding components. Trims offer increased protection at vulnerable locations, facilitate construction, and/or provide an aesthetic element to a building. Common areas for trim usage include around windows and doors, at cladding inside/outside corners, floor lines, between different types of cladding, and at the base of walls. Common trim materials include comb-faced spruce, fiber cement board, metal, and polyvinyl sheets.

UNIFORMAT:

UniFormat is a North American based technical standard used for building asset life cycle and cost analysis as well as building specifications. It has been adopted by ASTM (American Society for Testing and Materials).

WARRANTY REVIEW:

A warranty review is a technical report written for a building generally 12-, 15-, 24-, 60-, and 120-months following construction. This report often includes a questionnaire for owners, a site visit by engineers for the purpose of reviewing the condition of various warrantable assets, and a professional opinion on construction deficiencies that may be warrantable by the insurance company. This report is most often commissioned by the owner(s) of the building. Types of warranty reviews will differ depending on what is covered, given a certain timeframe, but it is important to understand that only the insurer (not the engineer or contractor) can determine what a warrantable defect is. If there is disagreement, litigation can ensue, which would be costly to the property owners and insurance company.



APPENDIX F

CV OF KEY PERSONNEL



Wesley Narciso, M.Eng., P.Eng., FEC, CRP, PRA

Principal, Building Science
Division Manager



Wesley is a Senior Building Science Specialist, Division Manager and part owner, who has provided engineering consulting services in Canada and the US for more than 20 years. With over a hundred testing and failure analysis reports his unique expertise in materials testing, metallurgical engineering and corrosion has been beneficial in assisting with structural assessments, fastener failure investigations and domestic water pipe replacements.

Wesley has applied his building science experience to a broad spectrum of building types — wood-frame low-rise and concrete high-rise residential buildings to steel-and-glass commercial, office, and institutional buildings. He has performed and reviewed over 400 hundred targeted and full-scale building/property assessments/investigations, provided recommendations to a variety of clients with respect to their financial and asset management and helped resolved multiple warranty claim disputes. Wesley has experience in research, design, and project management on a variety of west coast projects. He has provided legal support in Canada and the US, as well as expert witness testimony in the Supreme Court of BC.

An active participant in the building science industry, Wesley takes part in professional committees and presents at conferences, to industry groups and associations. As part of SeaBEC, he helped plan their first Building Enclosure Symposium in 2011. He was the first Professional Engineer in BC to become a Certified Reserve Planner and the only Professional Engineer in North America to also be a Professional Reserve Analyst.

Wesley is an official Mentor with EGBC and was awarded Mentor of The Year in 2012, the inaugural year of the award. He was also awarded Fellowship at Engineers Canada and the recipient of EGBC's 2014 Young Professional Award (President's Award). A coveted President's Award is the top honour for engineering in BC.

PROFESSIONAL REGISTRATION

Engineers and Geoscientists of BC
- Registration No. 32194

EDUCATION

Bachelor of Applied Science, Materials Engineering
- University of British Columbia
Master of Engineering Building Science
- British Columbia Institute of Technology

INDUSTRY INVOLVEMENT

Engineers and Geoscientists of BC
- Past presenter
- Official Mentor
- Competency Assessor for P.Eng. applicants
- Designated Reviewer for complaints
- Member of Accredited Employer Program Advisory Group
British Columbia Institute of Technology (BCIT)
- Building Science Masters Program Advisory Committee Member
Real Estate Institute of Canada (REIC)
- Certified Reserve Planner
- Standards Committee Member
Association of Professional Reserve Analysts (APRA)
- Professional Reserve Analyst
Canada Green Building Council (CaGBC)
- LEED Accredited Professional

INDUSTRY INVOLVEMENT

American Society for Testing Materials (ASTM)
- Performance of Buildings Sub-Committee EO6
Seattle Building Enclosure Council

PRESENTATIONS & PUBLICATIONS

Wood Preservation and its Corrosive Effects on Metal Fasteners

Canadian Conference on Building Science and Technology Conference (2017).

Protecting Reinforcing Steel from Corrosion: A Comprehensive Analysis of Corrosion Protection Systems Used in Concrete Repair

Buildings XIV Conference (2019).

Condensation Analysis in A Cold Climate

BC Building Envelope Council (BCBEC) and Engineers Geoscientists BC.

Does Your Depreciation Report Have A Benchmark Analysis?

Condominium Home Owners' Association (CHOA) of BC Journal.

Sound Energy: Building Envelope Noise Control, Problems and Solutions

BC Building Envelope Council Conference and AGM (2018).

How Does Your Property Compare? A Compilation and Cross-Sectional Analysis of Over 200 Depreciation Reports/Reserve Studies.

Association of Professional Reserve Analysts Symposium (2018). Preliminary research published in CHOA journal (2014). BC Elements Magazine (2019).

Structural Condition Assessment and Evaluation of Steel Structures

Education Program Innovations Centre (EPIC).

Depreciation Reports for Strata Owned Properties & Depreciation Reports: A Wake-Up Call

BC Real Estate Convention.



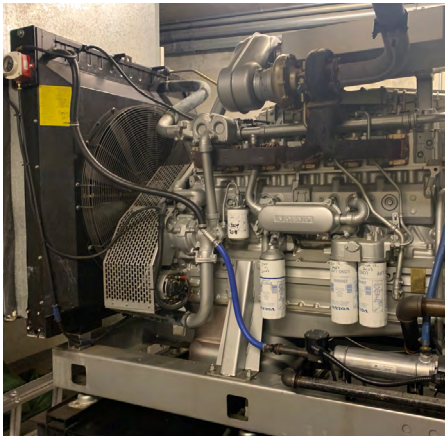
APPENDIX G

SUB-CONSULTANT REPORT



The Callisto/VRP01431B
1281 Cordova Street,
Vancouver, BC

Mechanical, Electrical, and Life Safety Depreciation Report

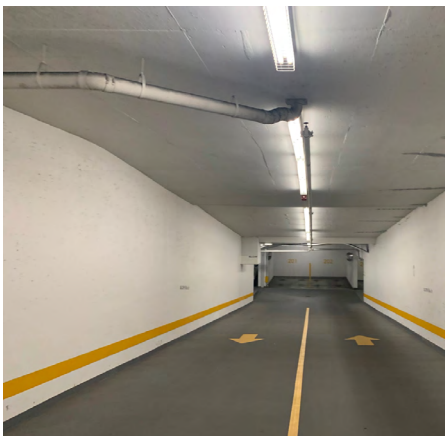


Prepared for: The Owners of the Callisto
JRS Engineering Ltd.

Prepared by: Besant and Associates Engineers Ltd.
besanteng.ca
604 990-1751

Project: Callisto
M, E, & LS Depreciation Report

Date: 15 February 2024 (draft rev 1.3)



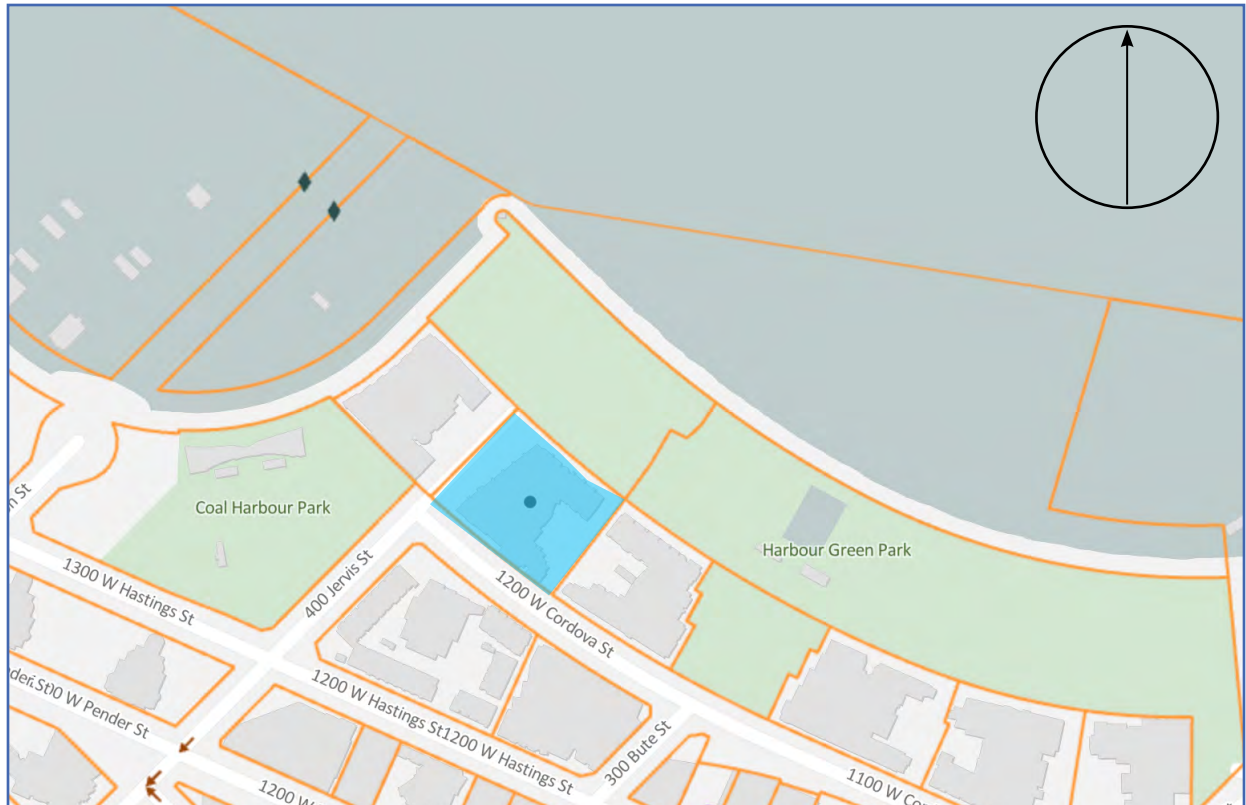


Photo E1.0

Site plan showing the Callisto property, highlighted in blue, located on the north side of Cordova Street in Coal Harbour (approx. scale: 1:1,000). Image was copied from the City of Vancouver GIS on-line map.

Executive Summary

At the request of the Owners of the Callisto (VRP01431B) and JRS Engineering, BAE reviewed the residential buildings located at 1281 Cordova Street in Vancouver (the Building). The Building has 126 suites within a 35-storey tower as well as townhouses, all of which sit above a three-level below-grade parking garage. The Building is a reinforced concrete construction. BAE understands that the owners took occupancy in 2002.

BAE completed a visual review of the mechanical, electrical, and life safety systems. BAE completed the review in order to identify defects in materials and labour related to common property components.

The suites are heated and cooled with heat pumps that are connected to a central boiler system and a cooling tower. The boilers are mounted in a mechanical penthouse. These boilers provide hot water to the heat pump loop for the common areas and the suites, and they also provide hot water to the heat exchangers for the pool and spa. Domestic hot water is provided by mid-efficiency boiler and held in glass-lined storage tanks. Domestic water flow (pressure) is modulated by variable frequency drives on the pressurization pumps, also with pressure reducing valves on various zones within the highrise tower.

The Building is fully sprinklered, with wet systems

for the conditioned areas of the Building and dry for those that are not.

LED and fluorescent lights have been used extensively.

The Building has an addressable fire detection system that appears to meet the latest ULC Standards.

We found that the maintenance efforts were generally adequate. There is no evidence that any of the mechanical, electrical, and life safety systems are not adequately maintained.

The Building is over 20 years old and as such many of the mechanical and electrical systems are nearing the end of their typical service lives. We have identified maintenance capital renewal projects, where required, with the mechanical, electrical, and life safety systems for the next 30 years. We have also identified maintenance tasks and service that may be required beyond ordinary routine activities.

Where necessary, we have included photos of the systems or equipment that we examined for this report.

Over the next ten years, the following major projects should be considered:

1. Replace the heat pumps in the suites. These were noted to be functioning, but they are approaching the end of their typical service life. And, their replacement is inevitable. We have provided a budget to replace 20 units per year over the next ten years.
2. The domestic water pipe is at risk of developing pin-hole leaks due to soft-water corrosion. The owners may consider a complete pipe replacement to cross-linked polyethylene (PEX) pipe. This kind

of pipe is known to be corrosion resistant and has a 25-year warranty. Or they may consider some form of water treatment, or a combination of pipe replacement and water treatment. We consider the existing water treatment apparatus in the basement mechanical room to be too much of a risk to put back into service.

3. We are concerned about the pipe system that supplies hot water to the pool and spa heat exchangers. A four-inch insulated steel pipe extends from the penthouse mechanical system to the pool mechanical room (35-storeys) and uses Victaulic couplings. It has had leaks, and runs through a wall inside the suites (not a pipe chase). We encourage the Owners to consider upgrading to a dedicated boiler system for the pool and spa.
4. The cooling tower is at an age where some kind of refurbishment may be required within the next ten years. Outright replacement is expensive (likely well over \$200K), but this kind of equipment can be refurbished for around \$50,000.
5. The fire alarm panel will have to be replaced within the next five years. The equipment suppliers are notoriously quick to discontinue product lines making it increasingly difficult to obtain replacement parts.
6. There are opportunities for lighting upgrades that will generally pay for themselves in three to five years. There is no immediate need to upgrade lights, but if major renovations or upgrades were undertaken inside the building, then upgrading the lights would likely be part of that kind of project.

The Owners have some discretion as to the timing of any of these projects.

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1.0 Terms of Reference

JRS retained BAE (Besant and Associates Engineers) to complete a depreciation report for the mechanical and electrical systems of the Callisto in Vancouver, BC (the Building).

We reviewed the mechanical, electrical, and life safety systems in order to understand how these systems were operated, what the median service life would be, and whether there were any deficiencies associated with the equipment selection, installation, or operation.

We received base building drawings, some of the maintenance history for the Building's systems, and met with an HVAC service contractor in order to better understand how the Building was performing.

Throughout this report "we" refers to BAE.

2.0 Acknowledgments

We wish to thank the Strata, the Property Manager, and Wesley Narciso and Jaspreet Minhas of JRS Engineering for their assistance in preparing this report.

3.0 Limitations

We completed a visual review. We did not remove equipment enclosures or take detailed measurements of specific building systems. During our review, we looked at the general arrangement and condition of the equipment.

4.0 Disclosure

We have no relevant financial or non-financial relationships to disclose.

5.0 Depreciation Report

Under British Columbia's Strata Property Act and regulations, strata corporations with five or more strata lots must obtain depreciation reports (unless voted against by a 3/4 majority).

A depreciation reports tells a strata corporation what common property and assets it has and what are the projected maintenance, repair and replacement costs will be over a 30-year time span.

6.0 Mechanical Systems

6.1 Plumbing and Drainage Systems

Description

The Building has a combined service for the fire suppression system and the domestic water system. There are three 7-1/2 hp booster pumps on the domestic water supply, and backflow preventers appear to be present in all the key locations. Hot water is generated by a single 400,000 BTUH atmospheric hot water boiler that employs three 120-USGal storage tanks mounted in the mechanical penthouse. Pressure reducing valves (PRVs) located throughout the Building regulate water pressure for the various fixtures. There are four zones for the hot water distribution in the tower portion.

The domestic water piping appears to be made of copper. Very little of the piping was visible for our review as it is hidden within walls and/or insulation. There are heat tracing systems in place for the water distribution pipes located in the parking garage.

There are both storm and sanitary distribution systems, including duplex sump pump systems for the sanitary (1/2 hp pumps) and storm systems (1 hp pumps). There are also duplex

sump pumps for the elevator sump pits (1/2 hp pumps). The drainage piping appears to be constructed primarily of cast iron with mechanical joints.

There is a water feature with a sand filter, circulation pump, and mostly PVC pipe.

Observations

The boiler is mid-efficiency and there would be considerable energy savings resulting from upgrading to high efficiency boiler; although, the simple payback on this kind of upgrade is generally over 20 years. We have provided a budget to replace the domestic water boiler and the storage tanks within the next 10 years (with a high efficiency boiler) due to the age of the equipment.

The PRVs, circulation and recirculation pumps for the domestic hot water system, and expansion tanks that serve the water distribution system are located in mechanical closets located behind access panels. Where observed, we found that some of the piping is missing its thermal insulation. This equipment can be replaced out of the annual maintenance budgets. We find that PRVs are maintenance intensive and often require replacement after two or three years of operation.

Copper pipe is known to be susceptible to soft-water corrosion. Metro Vancouver has made efforts to reduce the rate of corrosion in copper pipe for domestic water systems; however there are still persistent problems with soft-water corrosion. We have provided a budget to repipe the copper pipe in the building because of the known problem with soft-water corrosion. However, we also suggest that the owners consider some form of water treatment to prevent or slow the development of problems with pin-hole leaks.

The systems and equipment required for a water treatment system would cost about \$60,000 to install and the monthly maintenance and service costs would be about \$600 for the entire building in perpetuity.

Unfortunately, we are seeing issues with drainage pipe more commonly in buildings. Most commonly these occur on the kitchen drain lines. It could be due to aggressive maintenance practices by service contractors. But there are likely a few different possible causes. Nonetheless, we have to allow for major upgrades to the sanitary drainage system simply because that kind of problem does occur with some regularity in high-rise residential buildings.

The water pipe, pump, and filter for the water feature will have to be replaced or upgraded within the next ten years.

Sump pumps can be replaced from the annual maintenance budgets. We have included an allowance for these kind of repairs.

Table 6.1 Plumbing Maintenance Capital Budgets

Description	Year	Budget
Replace hot water boiler and storage tanks	2032	\$40,000
Replace domestic water pipe	2027	\$1,800,000
Replace sanitary drainage lines from kitchen	2044	\$2,200,000
Replace water feature pump, filter and some piping	2030	\$15,000
Maintenance expenditures for plumbing repairs and renewals	2029 2034 2039 2044 2049	\$10,000

6.2 Heating, Ventilation, and Air Conditioning Systems

Description

There are two 1,000,000 BTUH atmospheric, mid-efficiency boilers for heating and one 600-ton cooling tower used to reject heat from the heat pump loop.

Heating and cooling throughout the Building are provided by heat-pump based fan coils. The fan-coils are connected to two central boilers and the chiller. The various common rooms are also heated and cooled with fan-coils.

The heat pumps in the suites range in size between 3/4 tons and 3 tons of cooling capacity (1 ton = 12,000 BTUH or 3.51 kW). These will likely have to be replaced within the next 10 years simply due to their age and normal wear. We have budgeted for twenty heat pumps to be replaced every year for the next 10 years.

There are duplex pump systems for the heating loop and for the condenser water loops in the mechanical penthouse. It appears that the pumps are operated in a lead/lag manner to prolong their services lives. The pumps will have to be replaced within the term of this report.

The tower has an indirect fired make-up air unit with integrated AC, located at the rooftop level rated at 10,000 CFM. There is a second 7,000 CFM make-up air unit that serves the pool area that is mounted in parkade level mechanical room. The make-up air unit for the pool has a hot water coil for heating.

The suites have a central exhaust system for the bathrooms.

There is a gas detection system in the parking garage that controls the operation of the main parking garage exhaust fans.

The garbage, storage, and service rooms are all vented by a fractional horsepower exhaust fans. There are almost 70 fractional horsepower fans with a variety of control strategies throughout the Building.

The elevator room is served by a fractional horsepower exhaust fan controlled by a reverse acting thermostat for cooling.

Observations

The heating boilers are mid efficiency. Generally, high efficiency boilers will reduce costs considerably, however the simple payback on this kind of retrofit project is usually over 20 years. Therefore, the best strategy is to replace the boilers when they are the end of their typical, or median, service life.

The cooling tower will be expensive to replace because of the cost of the crane required to lift the equipment to the roof (very likely close to \$150K just for the crane). We suggest that the cooling tower can be refurbished and remain in service for many more years without undertaking a complete replacement.

The roof-mounted make-up air unit will also eventually have to be replaced. But, the owners may be able to replace heat exchangers, fans, and compressors without completely replacing the unit for many more years. The make-up air unit for the pool is less expensive to maintain and because it is mounted indoors should remain in service for much longer.

The fractional horsepower exhaust fans can be replaced out of the annual maintenance budgets.

Table 6.2 provides budgets and suggested timing for the various HVAC projects we have discussed in this report. The owners may choose to change the timing of these projects to suit their planning process.

Table 6.2 HVAC Maintenance Capital Budgets

Description	Year	Budget
Replace heating boilers	2032	\$120,000
Refurbish cooling tower	2027	\$50,000
Replace heat pumps within the suites (assume 20 per year)	2025 to 2035	\$80,000/yr
Replace refurbish roof mounted make-up air unit	2030	\$20,000
Replace roof mounted make-up air unit*	2040	\$200,000
Refurbish make-up air unit for pool area	2034	\$15,000
Replace circulation pumps for heating and condensing loops	2034	\$20,000
Maintenance budget for fractional horsepower exhaust fans	2029 2034 2039 2044 2049	\$5,000

* We noted that the central exhaust system could be used with a heat recovery ventilator on the main air handling unit. This kind of retrofit should be analyzed when the unit is replaced.

6.3 Pool and Spa

Description

The lap pool and spa are heated with shell and tube heat exchangers. There are circulation pumps and sand filters for each pool. The spa also has a jet pump. The pipe is all schedule 40 PVC.

Observations

The lap pool and spa are heated with shell and tube heat exchangers. There are circulation pumps and sand filters for each pool. The spa also has a jet pump. The pipe is schedule 40 PVC. Table 6.3 contains these budgets.

The HVAC service person mentioned issues with the hot water supply to the pool, spa, and make-up air system for that area. There is a loop of pipe with Victualic connections that extends from the mechanical penthouse to the P1 level where the pool equipment resides. The pipe has leaked. The owners may choose to repair

leaks as they occur for this system. However, the owners may also consider installing a boiler system dedicated to the pool and spa rather than maintaining the existing pipe. The boiler and circulation pumps could be placed with the water treatment system is placed in the P1 level service room. The cost of this upgrade is probably close to \$80,000, but we would have to dig into the design more to get proper cost estimates. Since this is an upgrade, we do not consider it part of the depreciation report scope. The owners may choose to simply repair the pipe if problems develop.

Table 6.3 Pool and Spa Maintenance Capital Budgets

Description	Year	Budget
Replace pumps, filters, and some pipe for pool and spa	2034	\$20,000

7.0 Electrical Systems

7.1 Central Distribution

Description

The Building receives power through a medium voltage (12.47kV) load break switch in the main electrical room. The load break switch feeds the main transformer (2,750 kVA), which in turn feeds the main and secondary breakers and the central distribution panels. The central distribution panel feeds the residential house meter centres, electric vehicle systems, mechanical systems, and life safety systems. Secondary transformers step the voltage down to 120/208 volts for use in the suites.

The main electrical room has mechanical cooling via redundant heat pumps on the heat pump loop.

There are EV charging stations in the parking garage.

Observations

We did not receive any reports of operational problems with this system. The owners retain contractors to complete the proper maintenance on these systems. We expect that most of the electrical distribution equipment can remain in service for the life of the building. The heat pumps can be replaced out of the budgets provide in the HVAC section of this report.

The cost for the EV charging stations maintenance will be dependent on usage. The cables can be \$500 to replace. Frequently, most building owners have a maintenance contract in place that covers cables, software upgrades, cleaning, and minor reports. Often the cost is in the range of \$300 per year per charging station. This would be characterized as a routine annual maintenance expense.

7.2 Lighting

Description

The interior hallway lighting consists of LED and fluorescent lighting fixtures. The common rooms have recessed fixtures and pendant lights. There appear to be LED exit lamps throughout the Building.

The parkade, service and storage rooms, and the stairwells have fluorescent strip lights. Outside, there are ceiling flush mount lights, wall sconces, and cast in place step lighting. The rooftop lighting has numerous wall mounted HID and compact fluorescent fixtures.

Observations

There are opportunities to undertake lighting upgrades. These generally pay for themselves in three to five years. There should be payback calculations undertaken for any large scale lighting upgrade that may be considered. Owners usually undertake lighting upgrades when they complete updates to the Building

interior. We have budgeted for the interior lighting to be replaced within the next fifteen years (Table 7.2).

Table 7.2 Lighting Maintenance Capital Budgets

Description	Year	Budget
Replace common area lighting	2034	\$80,000

7.3 Communication and Security Systems

Description

There is a door entry system, key fobs for common area and elevator access, and security cameras at various locations.

Observations

In the communication and sub-communication rooms, various penetrations are missing smoke seals.

The security systems appear to be functional. We did not receive any complaints about their operation.

Eventually, the security systems have to be upgraded. We understand that the owners have recently completed an upgrade to the door entry system.

Table 7.3 Security Maintenance Capital Budgets

Description	Year	Budget
Replace security systems	2044	\$80,000

7.4 Elevators

Description

The tower has three overhead gear traction elevators. The elevators all have infrared door edges, voice call out systems, and are linked to the security system.

Observations

The major components of elevator systems have a median service life of 30 years. We have budgeted for the elevators to be upgraded within the next fifteen years. Owners often choose to spread these projects out over several years. We encourage the owners to retain the services of an elevator consultant to review these systems periodically in addition to the services provided by the maintenance contractors. We understand that there is comprehensive maintenance contract in place for the elevator systems at this time.

Table 7.4 Elevator Maintenance Capital Budgets

Description	Year	Budget
Replace elevator systems	2035	\$900,000

7.5 Gas Detection System in Parking Garage

Description

There are sensors for CO and NOx throughout the parking garage. These control the constant speed exhaust fans that ventilate the parking area.

Observations

The gas detection system appears to be functional. We did not receive any complaints about their operation or see any sensors which were out of service.

Sensors have to be tested and calibrated annually. The sensors eventually have to be replaced. This can be categorized as an annual maintenance cost. The cost of maintaining the exhaust fans is covered in a previous section of this report.

8.0 Life Safety Systems

8.1 Fire Alarm System

Description

The Building has a central fire alarm control panel (addressable capabilities) with communication functionality that meets the latest ULC requirements. The fire alarm annunciator panels are located in the main foyer. Where observed, there are heat detectors in the service rooms and pull stations at the exits. Smoke detectors are located in storage rooms and at the top of the stairwells, and there are buzzers within the suites. The suites have smoke alarms.

Observations

The elements of the system we observed during our visual review were properly installed and functioning correctly. There were no alarm indications on the panel.

The owners are required to complete annual inspections of the fire alarm system. This is a maintenance item.

Panels commonly have to be replaced after 20 to 25 years of service because they become expensive to maintain.

Table 8.1 Fire Detection Maintenance Capital Budgets

Description	Year	Budget
Replace fire detection systems	2034	\$200,000

8.2 Fire Suppression System

Description

There is a wet system serving the occupied areas, a dry system for the parking garage, and wet stand-pipe systems in the stairwells with 2½-inch hose connections. Only portions of the dry system were observable, and this system was observed to be constructed of ductile iron pipe. There are also ABC type hand-held fire

extinguishers throughout the Building. The fire extinguishers are clearly marked.

Observations

We did not receive copies of the verification report or the Fire Marshall's review. The elements of the system we observed during our visual review were properly installed and functioning correctly. We did not receive any reports of issues with this system.

We have give a budget to complete minor repairs to the fire suppression system such as replacing alarm valves, dry valves, compressors, and switches.

Fire Guard or CPVC pipe is used in some areas. In our experience, CPVC piping is a risk for buildings. CPVC is allowed by the Code, but it is known to become brittle over time. Once the pipe becomes brittle, there is an increased risk the pipe will fail when there are pressure changes in the system, especially with the use of a fire pump.

Table 8.2 Fire Suppression Maintenance Capital Budgets

Description	Year	Budget
Replace valves, pumps and controls	2035	\$30,000

8.3 Emergency Generator

Description

There is 400 kW Volvo diesel generator located on the P1 level of the parking garage that appears to be shared between the two adjacent towers that share the parking garage. The diesel storage tank is mounted below the generator.

There is an emergency distribution panel fed by the generator.

Observations

We did not receive any reports of problems with this system.

The system appears adequately installed. The generator will eventually have to be refurbished.

Table 8.3 Generator Maintenance Capital Budgets

Description	Year	Budget
Refurbish generator and transfer switch (we assumed costs are shared with other tower)	2035	\$20,000

9.0 Conclusions and Recommendations

The mechanical and electrical systems serving the Building have generally been properly installed and maintained. Most of the renewal projects are simply due to normal aging and wear.

The Building is over 20 years and as such many of the mechanical and electrical systems are nearing the end of their typical service lives. We have identified maintenance capital renewal projects, where required, for the mechanical, electrical, and life safety systems within the next 30 years. We have also identified maintenance tasks and service that may be required beyond ordinary routine maintenance activities.

Mostly these are fairly common expenditures. Within the near term, the Owners will have make decisions about their domestic water system and possibly about the hot water supply from the mechanical penthouse to the pool mechanical room. The other area of concern is the make-up air unit on the roof. Every effort possible should be undertaken to prolong the life of this system because it will be expensive to replace the make-up air unit. The same applies to the cooling tower. We recently received a quote of

almost \$150,000 for crane lift to a tall building in Vancouver (and helicopter was going to be twice as expensive).

As with all depreciation reports, the timing of these project we have listed is somewhat discretionary.

Please contact the undersigned should you have questions on this report.

Best regards,
Besant and Associates Engineers Ltd.

Jeff Besant, P.Eng.
Permit to Practice #: 1000959