Vantage Pointe Condominium Corporation

Plan No: 071 0813

Address: 1035, 10th Avenue SW, Calgary AB

2017 Capital Replacement Reserve Fund Study

Managed by:

FirstService Residential

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EXECUTIVE SUMMARY

The intent of a Capital Reserve Fund analysis is to develop and determine the financial requirements for future major repairs and/or replacement of the common property components owned by the Corporation. These financial requirements are required by the Province of Alberta as stipulated in the Condominium Property Act.

Wall Engineering Ltd. has performed visual inspections of the building to determine the current general condition of common property building components. The anticipated life and replacement costs of each component are derived from published data, discussion with contractors, and our experience within the industry. These projections are accepted industry standards and do not necessarily reflect the actual life or cost of the component installed. The present equivalent age and the expected normal life determine the remaining life of a specific component.

Reserve fund projections are prepared based on the present annual contributions as well as the calculated future contributions in order to maintain a minimum balance in the reserve fund. Possible funding scenarios are provided for consideration by the Board. Legislation requires that the Capital Replacement Reserve Fund analysis and cash flow charts be updated at a maximum of five years to reflect the current condition of the common property as well as requirements of the Corporation.

In general the complex appears to be in good/fair condition with minimal large expenditures expected within the next 5 year cycle. Roof restoration, parapet restoration, heating piping replacement and smoke detectors/ strobe replacement are a few of the items expected to occur in the near term. Given the age of the building, more expenditures are predicted to occur near the latter half of the study and will require increasing the fund gradually over time in order to accommodate. Cash flow projection anticipates a 3.5% annual increase over the 25 year scenario to maintain the fund.

Reserve Fund Background Information:			
Condominium Plan No.:	071 0813	**Draft Issue Date:**	March 20, 2017
Number of Units:	355	**Final Issue Date:**	August 29, 2017
Construction Year:	2004 to 2007		
Year End of Corporation:	March		
Opening Balance	$ 752,468		
Current Annual Contribution	$ 243,444		
Reserve Fund Projection	25 years		

Table of Contents

1.0 INTRODUCTION 1
2.0 COMMON PROPERTY AND PARTIAL DESCRIPTION OF THE COMPLEX 2
3.0 METHODOLOGY OF THE STUDY 3
4.0 PROPERTY CONDITION ASSESSMENT RESULTS 5
4.1 Building Envelope and Exterior Elements 5
Table 4.1: Building Envelope and Exterior Elements 8
4.2 Roofing 9
Table 4.2: Roofing 10
4.3 Interior Elements 11
Table 4.3: Interior Elements 11
4.4 Structural Elements 12
Table 4.4: Structural Elements 12
4.5 Mechanical Systems 13
Table 4.5: Mechanical Systems 15
4.6 Electrical Systems 16
Table 4.6: Electrical Systems 17
4.7 Fire Safety Systems 18
Table 4.7: Fire Safety Systems 18
4.8 Elevator Systems 19
Table 4.8: Elevator Systems 19
4.9 Miscellaneous Items 19
Table 4.9: Miscellaneous 19
5.0 DISCUSSION 20
Table 5.1: Summary Table 21
Table 5.1: Summary Table (Continued) 22
Table 5.2: Expenditure Timeline 23
Table 5.2: Expenditure Timeline (Continued) 24
6.0 RECOMMENDATIONS – CASH FLOW PROJECTIONS 26
6.1 Cash Flow Projection Scenario 1 26
7.0 CLOSURE 27

1.0 INTRODUCTION

In response to your request, Wall Engineering Ltd. completed a capital replacement reserve fund study on behalf of the Board of Directors. The primary intent of the study is to inventory all major common property owned by the corporation, visually review all items to form an opinion of their general condition, determine the future financial requirements to repair or replace the common property and endeavor to ensure availability of adequate funds to cover the foreseeable capital expenses over the next 25 years. In addition to the financial requirements, the assessment is intended to establish a general timeline for the foreseeable repair or replacement of common property and gauge the expected remaining service life of the individual items. No destructive testing or selective dismantling was performed to confirm actual installed conditions for the preparation of the study. The following information was provided to assist with the study:

1. Condominium plan, original architectural, structural, electrical and mechanical drawings (as provided by the Client).
2. The Condominium bylaws.
3. Existing Reserve Fund balance as of the last year end, anticipated contribution for the next year, interest and inflation rates.

The Province of Alberta Condominium Property Act, Revised Statutes of Alberta 2000 Chapter C-22 and the Condominium Property Regulations 168/2000 with amendments up to and including Alberta regulation 103/2011 were used for the purposes of this reserve fund study and defines the Capital Replacement Reserve Fund as an amount of money:

"used to provide sufficient funds that can reasonably be expected to provide for major repairs and replacement of any real and personal property owned by the Corporation, and the common property, where the repair and replacement is of a nature that does not normally occur annually" (Section 38.1).

The Condominium Act requires that a financial study be performed in order to generally assess and determine the amount of funding required for the capital replacement of items on a property. The study must allow for sufficient funds to be available over the life of the complex. The function of the study is intended to provide a quantitative expression for the corporation to use to develop a proposed plan of action. A minimum fund balance approach has been used to prepare this study. This approach maintains the closing balance at or above a predetermined minimum amount over the study period (25 years). The individual replacement schedules for each item is intended to act as a guideline and can vary over the timeframe of the study, depending on the actual condition of the component, level of use or exposure and rate of deterioration as the item approaches the end of its service life.

In addition, the minimum fund balance approach incorporates a rolling budget concept such that the contributions are anticipated to change in subsequent study updates. As the reserve fund balance is set to a minimum value, the annual contributions may possibly need to be adjusted throughout the life of the complex to reflect changing or actual annual conditions.

Annual maintenance items are not intended to be included in the Capital Replacement Reserve Fund, and must be accounted for separately by the Board, typical through an operations and maintenance budget. For the purposes of the financial projections, the study only includes the repair and replacement expenditures that are expected to be required within the next 25 years. Components that may require repair or replacement beyond the 25 year projection period have been listed as they will appear in subsequent updates although budgets have not been included.

2.0 COMMON PROPERTY AND PARTIAL DESCRIPTION OF THE COMPLEX

The Vantage Pointe Condominium Complex was constructed circa 2004 to 2007. The 355 unit apartment style complex, common hallways, and lobby. The exterior façade consists of a number of different materials, including brick, exterior insulation finish (EIFS), curtain wall glazing and punched aluminium windows. Windows and doors are considered common property and are incorporated into the study. Flat roofing, 3rd floor plaza assembly and waterproofed balconies are also included. Central common boiler systems, hot water supply system, cooling systems, fire suppression systems, building pressurization units and electrical systems are a few of the major mechanical and electrical common property items located within the complex. The Condominium Property Act defines that

"Common Property means so much of the parcel as is not comprised in any unit shown on the Condominium Plan, but does not include land shown on the condominium plan that has been provided for the purposes of roads, public utilities and reserve land" (Section 1 (1) f).

The following common property areas have been included in the reserve Fund Study:

- Exterior walls and roofing materials,
- Fencing, railings, and guards
- Parking areas and sidewalks,
- Exterior balconies,
- Interior finishes, including hallways, stairwells and common rooms,
- The building structure,
- Boilers, heating and cooling systems
- Water supply systems,
- Electrical components, lighting and supply systems.
- Fire safety components, panels and alarms.
- Landscaping works,

- Utility services through the common property.

Items located within the units have not been included in the reserve fund calculations, such as paint, floor and wall coverings, lights, receptacles, or plumbing fixtures, such items are not considered common property and do not affect other Units or the Corporation.

3.0 METHODOLOGY OF THE STUDY

Reserve fund calculations are based on the replacement budgets for capital items and the respective expected normal service life. For some items, the Board will need to decide whether to maintain a component beyond its expected service life or to replace it. This will require a detailed review or inspection of the particular component by qualified individuals and assessment of the costs, risks, and benefits of performing either restoration or replacement work. This type of assessment and recommendation is not part of a reserve fund study. Maintenance will be required to help a component reach its expected normal life.

As the component reaches the end of its expected life, maintenance of the component might not be economically feasible or practical. The expected life values are determined based on standard industry practices, published values, and our own experience. The equivalent age of an item is based on current performance reports, and visual assessment rather than the actual age of a component (which would be based solely on the time of installation). Maintaining the component beyond its expected service life could result in higher maintenance costs and increased risks associated with failure of the component.

We attempt to determine the life expectancy, replacement costs and present condition of a particular item as accurately as possible; however, this is neither a detailed condition assessment nor an exact science, especially with respect to underlying or buried elements hidden from view. Actual or hidden conditions may differ significantly from the assumed conditions.

Opinions of costs and present condition rely on published data on expected service lives of components, discussion with contractors and on our previous experience. These are not firm costs and the actual cost and life predictions will vary. There may also be unforeseen conditions that could affect the proposed expenditure schedule. This could require adjustment to the time frames for the work and in some cases, could result in special assessments, should there be a large, unbudgeted expense in any particular year. In addition, the level of maintenance performed can significantly impact the life expectancy of a component. Therefore, it is important to update technical assessments periodically in order to keep the fund schedule current.

The projected timing of expenditures is estimated and should not necessarily be used to determine the actual timing of repairs or replacements. Year to year adjustments to timing and/or phasing of repair programs have little effect on the required contribution. The Board should develop their annual budgets based on actual conditions at that time and should not rely upon the projection represented on the Reserve Fund Expenditure Schedule, which attempts to predict expenditures too far into the future to be reliable in the short term.

The following condition rating system has been used to help qualify and describe the condition of the individual components.

Condition Rating:

• Good	No Deficiencies or concerns reported. No capital expenditure is anticipated within the next 15 years
• Good/Fair	Reasonable Condition as a whole; minor deficiencies noted. No Capital expenditure is anticipated within the next 10 years
• Fair	Reasonable Condition as a whole; deterioration noted in isolated areas. Capital expenditure is anticipated within the next 10 years
• Fair/poor	Deterioration/damage noted and the item is approaching the end of its expected service life. Capital expenditure is anticipated within the next 5 years.
• Poor	Deterioration/damage noted and the item is at or exceeded its expected service life. Capital expenditure is anticipated within the next 0 to 2 years.

This assessment does not include the review of components for the compliance with applicable codes and/or regulations. No calculations or testing of the systems or equipment have been undertaken to ascertain the internal condition or capacities of the components/systems to meet the code or original design requirements of the building.

4.0 PROPERTY CONDITION ASSESSMENT RESULTS

4.1 Building Envelope and Exterior Elements

Photograph 1: Building Envelope

In this section, repair or replacement allowances have been made for components or finishes on the exterior areas of the building. These areas consist of the exterior walls, windows, balconies, and associated exterior components. We recommend that a building envelope condition assessment be performed if moisture infiltration or evidence of deterioration is reported through any of the wall or window assemblies in the future.

Photograph 2: Building Envelope

The building is predominately clad with curtain wall, which is composed of components such as the sealed glass units, spandrel panels, mullion caps, pressure plates, gaskets, and exterior joint sealants. These components provide the primary line of defense against water penetration by forming a rain-shedding screen and by minimizing the number and size of penetrations through which direct rain penetration can occur. A secondary line of defense is provided to intercept incidental water that bypasses the primary line of defense and to dissipate it to the exterior by means of a drainage plane (air cavity) behind the cladding components and drainage paths to the exterior (e.g. weep holes in the horizontal pressure plates, back-pans, and mullion caps of the curtain wall assemblies). The overall curtain wall appears to be in good condition and the normal life expectancy of this system can be extended with regular maintenance.

Photograph 3: Building Envelope

We recommend that periodic inspection of the curtain wall be undertaken, preferably on a two to five year basis. This inspection will help to identify problems that can be corrected as part of a maintenance program. For the purpose of the study we have included a restoration budget that would account for select replacement of sealed window units, glazing seals and sealants. Complete replacement of the entire curtain wall assembly is not expected to occur within the term of this study

Additional punched window assemblies consist of operable and sealed fixed units that are set in metal frames. The windows appeared to be in fair condition at the time of our review; however, as the units continue to age their condition will vary with the level of exposure to the elements. We understand that windows and doors are included as a common property item and we note that they affect the integrity of the overall building envelope as well as operation of the mechanical systems. The sealed units typically have a life expectancy of around 30 to 35 years, depending on factors such as the quality of the manufacturing, type of installation, and the type of sealed unit used. Maintenance programs and

regular cleaning will be required in order for the units to reach their anticipated service lives and limit the effect on the adjacent building envelope components.

Photograph 4: Brick cladding.

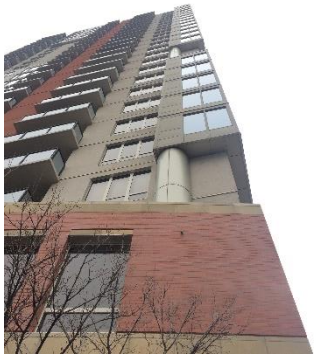
The complex is also clad with brick veneer, which appeared in good condition at the time of our review. Minor staining and cracking of the mortar was noted, however did not appear to be a concern and full replacement of the component is not anticipated within the timeframe of the study. The brick wall assemblies utilize the rainscreen approach for moisture management. The rainscreen approach to controlling environmental loads is based on the principle that moisture penetration through the exterior surface of the building envelope is inevitable over of the life of building. The system uses multi-layer seals (primary seal through surface drainage and secondary seals within the cladding) and purpose built drainage cavities to capture and discharge incidental moisture that bypasses the exterior cladding surfaces back to the exterior. A partial restoration budget for repointing of joints and select brick/stone unit replacement is included in the study.

Photograph 5: Metal Panels and Awning.

Additional sections of an Exterior Insulation and Finish System (EIFS) are located throughout the exterior wall assembly. EIFS is typically comprised of an acrylic modified cementitious finish coat over a reinforced cementitious base coat applied directly onto rigid polystyrene insulation. The primary benefits of an EIFS assembly are the energy efficiency and potential increased thermal performance. We note however, that EIFS can be generally susceptible to impact damage and has a tendency to restrict drainage and drying potential, however, the EIFS performance depends on the specific assembly, drainage provisions and underlying waterproofing details.

Photograph 6: Main Entrance

The EIFS appeared in good/fair condition at the time of our review. Maintenance to the cladding should be performed on an as needed basis and future maintenance should include replacement of cracked and missing finish coating, and installation of supplemental sealants. With continued maintenance the restoration costs for the cladding and surrounding components should be reduced and the expected service life can be extended.



Photograph 7: Metal Panels.

Metal railings with glass infill panels and select metal railing systems are located along the perimeter of the plaza, individual balconies, roof top patios and throughout the complex. Railings/fencing will require regular repainting and eventual replacement; however, replacement timing will depend on factors such as level of use and desire to update appearance. We have included full

replacement costs of both balcony guardrails and fencing. We note that the expected life of both components can be significantly extended should the Corporation choose to refinish/repaint the railing systems.

Photograph 8: Penthouse Cladding.

We understand that the upper floor balconies have been waterproofed using a liquid applied membrane. Regular review and repair of the membrane should be performed in order to protect the underlying structure. Future replacement of the balcony structure will not be required provided the balcony waterproofing is maintained; however, future replacement of the waterproof membrane will be required.

Metal cladding/trim panels appeared to be in good condition and eventual replacement has been included, as potential corrosion of the metal panel and/or anchors may occur. Depending upon the desire to update appearances, the Board and owners may wish to consider repainting/finishing the panels on a regular basis to maintain the surface integrity of the coating prior to replacement. We have included a partial repainting budget within the reserve fund study.

Photograph 9: Building Envelope.

Refuse/loading dock doors have been included in the study and the expected service life will highly depend on the frequency of use and level of maintenance on the individual door. Costs include both the door panels and motor replacement, additional funds will be required if the frame and hardware components are to be replaced in conjunction with the door.

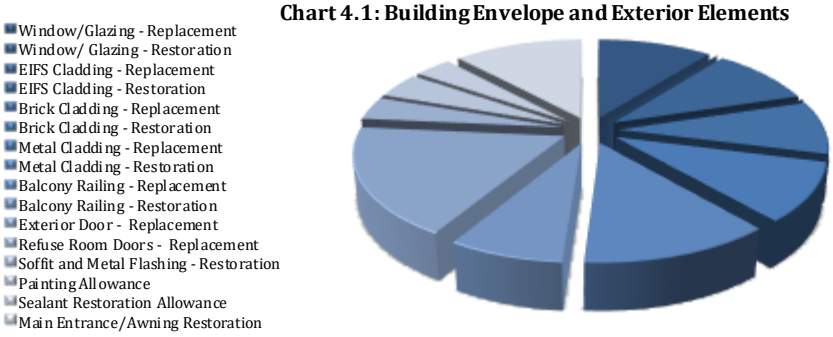
Measures should be taken to periodically review and maintain the sealants at joints or discontinuities in the cladding system. Care and judgment must be used where caulking is performed along the building so that it does not restrict water flow outwards from behind the cladding assemblies. The longevity of these sealant materials will vary with the quality of the material and installation practices would be included as part of the operations and maintenance budget.

Photograph 10: Refuse Doors.

Table 4.1: Building Envelope and Exterior Elements

BUILDING ENVELOPE AND EXTERIOR ITEMS		Cond.	Expenditure ($)	Spread (Yrs)	Budget ($/yr)	Expected Life (Yrs)	Adjusted Age (Yrs)	Remaining (Yrs)	Total Cost
4.1.1	Window/Glazing - Replacement	Good/Fair	$2,484,000	4	$621,000	40	10	30	$0
4.1.2	Window/ Glazing - Restoration	Good/Fair	$248,000	1	$248,000	20	10	10	$248,000
4.1.3	EIFS Cladding - Replacement	Good/Fair	$1,506,000	4	$376,500	40	10	30	$0
4.1.4	EIFS Cladding - Restoration	Good/Fair	$226,000	1	$226,000	20	10	10	$226,000
4.1.5	Brick Cladding - Replacement	Good/Fair	$1,372,000	4	$343,000	55	10	45	$0
4.1.6	Brick Cladding - Restoration	Good/Fair	$206,000	1	$206,000	20	10	10	$206,000
4.1.7	Metal Cladding - Replacement	Good/Fair	$1,506,000	4	$376,500	40	10	30	$0
4.1.8	Metal Cladding - Restoration	Good/Fair	$226,000	1	$226,000	20	10	10	$226,000
4.1.9	Balcony Railing - Replacement	Good/Fair	$587,000	2	$293,500	35	10	25	$293,500
4.1.10	Balcony Railing - Restoration	Fair	$88,000	1	$88,000	15	12	3	$176,000
4.1.11	Exterior Door - Replacement	Good/Fair	$838,000	2	$419,000	35	10	25	$419,000
4.1.13	Refuse Room Doors - Replacement	Good/Fair	$45,000	1	$45,000	15	10	5	$90,000
4.1.14	Soffit and Metal Flashing - Restoration	Good/Fair	$156,000	1	$156,000	40	10	30	$0
4.1.15	Painting Allowance	Good/Fair	$50,000	2	$25,000	15	10	5	$100,000
4.1.16	Sealant Restoration Allowance	Good/Fair	$41,000	1	$41,000	15	10	5	$82,000
4.1.17	Main Entrance/Awning Restoration	Good/Fair	$280,000	1	$280,000	30	10	20	$280,000

Chart 4.1: Building Envelope and Exterior Elements



4.2 Roofing

The tower/penthouse and second/third floor roof assemblies appear to consist both conventional and protected membrane systems respectively. Please note that partial snow cover prevented full review of the conventional assemblies.

Photograph 11: Penthouse Roof.

In a conventional roof assembly the roof membrane is not adhered directly to the structure resulting in a separation between the structure and waterproofing layer. In the event of a puncture or membrane failure, moisture can gain access below the membrane and migrate within the roof assembly until it reaches a roof penetration (such as a drain or mechanical duct) where it can enter the interior as leakage. However, the 2-ply SBS membrane system incorporates additional protection and built-in redundancy against puncture when compared to single ply systems. We note that the waterproof membrane is fully exposed in a conventional roof assembly and consequently at a higher risk of mechanical damage (punctures) and pre-mature ageing from environmental conditions. The bitumen used in modified SBS membrane systems are highly susceptible to U.V. exposure and manufacturers embed granules into the top layer of the membrane system to prevent crazing and premature cracking. De-granulation of the cap sheet in SBS systems can occur over time through hail, wind scour, prolonged submersion under water, etc. Regular maintenance should be performed to maintain the U.V. protection, including supplementing granule loss.

Photograph 12: Tower Roof.

In a protected system the membrane is applied directly to the structure and overlaid with rigid insulation and ballast. This type of assembly tends to have a longer service life in comparison to other roof assemblies, such as conventional built up roofing (BUR) systems due to reduced exposure to temperature fluctuations, oxidation and UV degradation. The typical anticipated life of this type of assembly is in the range of 30 to 35 years or longer depending on the quality of original construction and scheduled maintenance. We understand that there were no reports of moisture leakage at the time of our review and that periodic maintenance is being performed as required. Ballast or finishes include concrete pavers, stone ballast and green/planter assemblies. Future roof replacement would include re-using these components and replacement budgets have not been included. Please note that underlying repairs to the roof structure would be in addition to the replacement budget.

Photograph 13: Roof Top Patios.

Select balconies form the roof over top of unit living spaces and are considered roof assemblies. Access to the individual roof assemblies was not provided during our review. We note that there have been reports of isolated moisture

ingress on select units and that repairs or replacement of the roofs is being performed. We assume that the partial replacement is being funded through the operations and maintenance budget.

Photograph 14: Second and Third Floor Roof Assemblies (section).

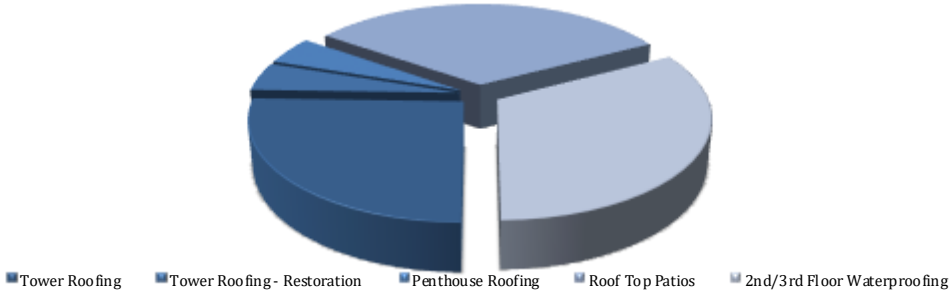
We understand that isolated areas of roof damage and parapet damaged occurred in 2016 during a high wind event and that repairs have been scheduled for the summer of 2017. Parapet restoration budgets have been provide in the previous section while we have included an allowance for restoration of the roof assembly below. These budgets should be considered preliminary and further adjustment may be required pending full review/tendering of the scope of work to contractors.

We recommend performing annual roof inspections as part of a preventative maintenance program and that the remaining life of the roofing be revised based on the results of the review and maintenance requirements. If any evidence of moisture infiltration is identified, remedial repairs should be initiated promptly to mitigate damage. Preventative maintenance measures should include cleaning and removal of debris from drains, sealant application to open joints or failed seams,

Table 4.2: Roofing

ROOFING		Cond.	Expenditure ($)	Spread (Yrs)	Budget ($/yr)	Expected Life (Yrs)	Adjusted Age (Yrs)	Remaining (Yrs)	Total Cost
4.2.1	Tower Roofing	Good/Fair	$390,000	1	$390,000	25	10	15	$390,000
4.2.2	Tower Roofing - Restoration	Good/Fair	$65,000	1	$65,000	15	14	1	$70,000
4.2.3	Penthouse Roofing	Good/Fair	$70,000	1	$70,000	25	10	15	$70,000
4.2.4	Roof Top Patios	Good/Fair	$150,000	1	$150,000	30	9	21	$500,000
4.2.5	2nd/3rd Floor Waterproofing	Fair	$500,000	1	$500,000	30	9	21	$500,000

Chart 4.2: Roofing



4.3 Interior Elements

Interior finishes and components have been grouped into areas rather than separately outlining the individual elements (e.g.: paint, flooring, ceiling finishes etc.) and include the main lobby, hallways, stairwells and elevator lobby areas.

Photograph 15: Lobby.

The frequency of refinishing work or renovation will vary depending upon both level of use and the intent to update appearance. For the purpose of the reserve fund, budgets have been provided to maintain the existing appearance and we have not included allowances for upgrades in materials. Additional budgets to perform annual maintenance have not been included in the study. Budgets provided only include a partial allowance to cover a medium repair. Additional funds or a special assessment will be necessary should full replacement be required within the time frame of the study.

The interior elements and common property finishes appeared to be in good condition at the time of review. We have included budgets for painting and replacement of tile and carpet in the common area finishes item. We understand that re-painting of the hallways and repair to the interior finishes is being performed and budgets have been included in the reserve fund. Regular maintenance and touch ups will help prolong the expected service life of the components. No budgets have been included for replacement of the handrails within the stairwells at this time.

Photograph 16: Hallways.

Tile finishes located throughout the lobby and hallway floors appear to be in good condition at the time of our review. The frequency of future replacement will depend on the Corporations desire to update appearance and wear in high traffic areas. Replacement costs will vary depending on the replacement tile selected.

Table 4.3: Interior Elements

INTERIOR		Cond.	Expenditure ($)	Spread (Yrs)	Budget ($/yr)	Expected Life (Yrs)	Adjusted Age (Yrs)	Remaining (Yrs)	Total Cost
4.3.1	Common Area Hallways/Stairwells	Good/Fair	$825,000	7	$117,857	25	11	14	$825,000
4.3.2	Common Area Rooms	Good/Fair	$150,000	1	$150,000	25	11	14	$150,000
4.3.3	Common Area Doors	Good/Fair	$357,000	7	$51,000	45	9	36	$0
4.3.4	Lobby	Fair	$85,000	1	$85,000	20	12	8	$85,000
4.3.5	Furniture Allowance	Good/Fair	$10,000	1	$10,000	15	9	6	$20,000
4.3.6	Exercise Equipment	Good/Fair	$35,000	1	$35,000	15	9	6	$70,000
4.3.7	Bathroom/Change rooms	Good/Fair	$25,000	1	$25,000	15	9	6	$50,000

4.4 Structural Elements

Photograph 17: Tieback Anchors.

The residential parkade structure includes 4 below grade levels and is accessed from a ramp at the east elevation of the site. The structure is considered a separate condominium and a separate study has been provided. Costs are not included herein.

We have included a partial concrete restoration allowance to repair various concrete items located throughout the mechanical/electrical rooms, exterior sidewalk, curbs, etc.

We note that the roof parapets may have been damaged during a 2016 high wind event and an engineering report has been provided for our review. We have included a restoration allowance based on that report and these budgets should be considered preliminary until the work is tendered to local contractors. Further adjust of the budget may be required.

The building is equipped with a tieback anchor system to safely provide exterior access to the tower. The steel components should be inspected and certified on an annual basis. Annual maintenance may be required depending on the level and type of use. Full replacement of the system is not anticipated within the time frame of the study; however we have included a restoration allowance to address isolated waterproofing and possible select steel replacement.

Table 4.4: Structural Elements

STRUCTURAL ELEMENTS		Cond.	Expenditure ($)	Spread (Yrs)	Budget ($/yr)	Expected Life (Yrs)	Adjusted Age (Yrs)	Remaining (Yrs)	Total Cost
4.4.1	Tieback Anchor System	Good/Fair	$45,000	1	$45,000	25	10	15	$45,000
4.4.2	Concrete Allowance	Good/Fair	$35,000	1	$35,000	15	7	8	$70,000
4.4.3	Parapet Restoration	Good/Fair	$35,000	1	$35,000	25	24	1	$35,000

4.5 Mechanical Systems

This section includes replacement of the various mechanical systems and equipment throughout the buildings. The service life of these items is dependent on the frequency of servicing and degree of maintenance. Therefore it is possible that the actual service life of a given component may exceed the normal life if the item is well maintained. Please note that systems or components located inside the residential units are not considered common property and are excluded from the study, unless specifically outlined in the bylaws.

Photograph 18: Boilers.

It may not be economically beneficial to rebuild a component when it has reached the end of its normal life as new energy efficient technology could be employed and may justify early replacement. We note that the mechanical systems have a direct effect on the building envelope and improper operation can lead to premature building envelope failure. The following list of major items is located within the mechanical penthouse, roof, parkade and throughout the building:

Photograph 19: Pumps.

- Boilers, exchangers, pumps and piping system
- Chiller and piping system
- Water Distribution System
- Heaters
- Make-Up Air Units
- Exhaust System
- Mechanical Control Systems

The boiler controllers allows for the lead/ lag of the heating system and maintains boiler temperatures, while the heating pumps circulate heated water from the boilers throughout the heating pipe system. Boiler flue gases are vented to the building exterior through boiler flues and will require regular inspection.

Photograph 20: Cushion Tanks.

The heating piping supplies hot water to common areas of the building such as fan coils, cabinet heaters, unit heaters and the perimeter radiant heat system. Minor problems and leaks were reported at the time of our review and that recent repairs have been conducted. We have allowed for repairs to the piping system to be performed throughout the study, however, the amounts may not be required in future years. We also note that various cushion tanks are scheduled to be replaced in the near term and we have adjusted the study accordingly.

The domestic water piping was noted to be copper, brass valves, and copper risers/ distribution to the residential

units. Sections of PEX piping have also been incorporated, believed to have been installed during past repairs.

Isolated leaks in both the heating piping and water piping should be repaired on an "as needed" basis, however replacement should be considered when it is more economical than select repair. Monitoring and recording locations and frequency of pipe leaks will help to determine when a replacement program should be implemented. Ultra sonic testing, to determine the existing pipe wall thickness in localized areas, could be completed in the future and would assist in scheduling the replacement. The actual timing of the replacement and costs will be influenced by factors such as the quality, quantity and configuration of the piping and its installation and the quality of interior finishes that will be affected during the work. The timing of the replacement of the piping will be a function of the rate of failure that occurs in the piping.

Photograph 21: Hot Water Tanks.

We note that additional mechanical systems located on the lower level floors and within the parkade have been included in the study. Systems located in these common areas include items that service the commercial retail units as well as the chiller for the main tower.

Photograph 22: Plate to Plate Exchanger.

Zone valves and thermostats are located within the individual units. Both of these items are included in a maintenance contract with base building mechanical service provider and replacement costs have been removed from the study.

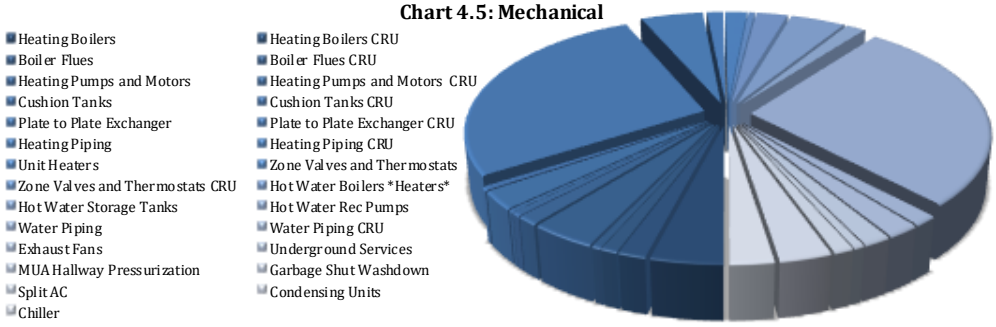
The storm and sanitary services consist of the underground lines that could be constructed of concrete and/or cast iron, which can deteriorate over time. Visual inspection of these underground services was not performed as part of this report. Typically, the sewer piping will not require complete replacement. We have not allowed for full replacement of the various underground service lines at this time; however we have provided an allowance for selected repair/replacement of lengths of pipe. Should repairs become significant or too frequent, replacement of the systems could be required.

Photograph 23: Water Piping.

Table 4.5: Mechanical Systems

MECHANICAL SYSTEMS		Cond.	Expenditure ($)	Spread (Yrs)	Budget ($/yr)	Expected Life (Yrs)	Adjusted Age (Yrs)	Remaining (Yrs)	Total Cost
4.5.1	Heating Boilers	Good/Fair	$65,000	2	$32,500	20	3	17	$65,000
4.5.2	Heating Boilers CRU	Good	$25,000	2	$12,500	20	3	17	$25,000
4.5.3	Boiler Flues	Good/Fair	$15,000	1	$15,000	20	11	9	$15,000
4.5.4	Boiler Flues CRU	Good	$8,000	1	$8,000	20	5	15	$8,000
4.5.5	Heating Pumps and Motors	Fair	$30,000	2	$15,000	15	11	4	$60,000
4.5.6	Heating Pumps and Motors CRU	Good	$10,000	2	$5,000	15	9	6	$20,000
4.5.7	Cushion Tanks	Fair/Poor	$9,000	4	$2,250	15	1	14	$9,000
4.5.8	Cushion Tanks CRU	Good	$5,000	1	$5,000	15	1	14	$5,000
4.5.9	Plate to Plate Exchanger	Good	$40,000	1	$40,000	25	2	23	$40,000
4.5.10	Plate to Plate Exchanger CRU	Good	$8,000	1	$8,000	25	2	23	$8,000
4.5.11	Heating Piping	Fair	$700,000	40	$17,500	30	12	18	$437,500
4.5.12	Heating Piping CRU	Good	$100,000	15	$6,667	30	9	21	$80,000
4.5.13	Unit Heaters	Fair	$21,000	3	$7,000	25	11	14	$21,000
4.5.14	Zone Valves and Thermostats	Good/Fair	$28,000	1	$28,000	20	9	11	$28,000
4.5.15	Zone Valves and Thermostats CRU	Good/Fair	$8,000	1	$8,000	20	9	11	$8,000
4.5.16	Hot Water Boilers *Heaters*	Good/Fair	$20,000	1	$20,000	15	9	6	$40,000
4.5.17	Hot Water Storage Tanks	Fair	$35,000	5	$7,000	15	12	3	$70,000
4.5.18	Hot Water Rec Pumps	Good/Fair	$12,000	1	$12,000	15	9	6	$24,000
4.5.19	Water Piping	Fair	$700,000	40	$17,500	30	12	18	$437,500
4.5.20	Water Piping CRU	Good	$25,000	10	$2,500	30	9	21	$22,500
4.5.21	Exhaust Fans	Fair	$15,000	1	$15,000	15	9	6	$30,000
4.5.23	Underground Services	Good	$200,000	2	$100,000	50	9	41	$0
4.5.24	MUA Hallway Pressurization	Good/Fair	$25,000	1	$25,000	25	9	16	$25,000
4.5.25	Garbage Shut Washdown	Good/Fair	$5,000	1	$5,000	15	9	6	$10,000
4.5.26	Split AC	Good/Fair	$18,000	1	$18,000	22	9	13	$18,000
4.5.27	Condensing Units	Good/Fair	$25,000	10	$2,500	15	9	6	$47,500
4.5.28	Chiller	Good/Fair	$40,000	1	$40,000	20	9	11	$40,000

Chart 4.5: Mechanical



4.6 Electrical Systems

The electrical systems and equipment will require continued maintenance and eventual replacement. The individual electrical systems within the units are not considered common property and have not been included in the reserve fund study.

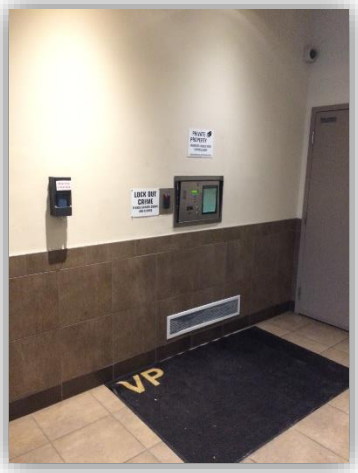
We note that energy efficient light bulbs are in process of being installed and original lighting will continue be gradually replaced over time throughout the common areas. The following list of items is located within the electrical room and throughout the building:

- Electrical disconnects
- Equipment disconnects
- Distribution centers
- Intercoms
- Light system
- Video surveillance system

A proper preventive maintenance schedule typically includes periodic cleaning and infrared scans of all panel, disconnects, motor starters and distribution centers. It is recommended that this practice be implemented. In addition, it would be anticipated that such a maintenance program would need to be increased in frequency as the buildings age.

The security system is comprised of keyless access readers, alarmed doors, closed circuit video camera system, monitor and video recording software. We understand that camera locations are located within the main floor and parkade. The system is serviced on a regular basis. We have included an allowance for office equipment, electrical equipment and common area electrical appliances below.

Photograph 24: Interior Lighting.



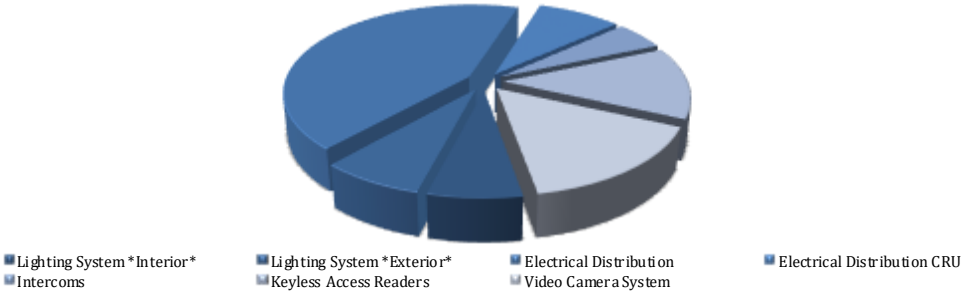
Photograph 25: Intercom.

Photograph 26: Disconnect.

Table 4.6: Electrical Systems

ELECTRICAL SYSTEMS		Cond.	Expenditure ($)	Spread (Yrs)	Budget ($/yr)	Expected Life (Yrs)	Adjusted Age (Yrs)	Remaining (Yrs)	Total Cost
4.6.1	Lighting System *Interior*	Good/Fair	$40,000	3	$13,333	20	0	11	$40,000
4.6.2	Lighting System *Exterior*	Good/Fair	$22,000	2	$11,000	15	9	6	$44,000
4.6.3	Electrical Distribution	Good/Fair	$250,000	1	$250,000	30	9	21	$250,000
4.6.4	Electrical Distribution CRU	Good/Fair	$50,000	1	$50,000	30	9	21	$50,000
4.6.5	Intercoms	Fair	$15,000	1	$15,000	18	9	7	$30,000
4.6.6	Keyless Access Readers	Fair	$38,000	1	$38,000	18	11	7	$76,000
4.6.7	Video Camera System	Fair	$45,000	1	$45,000	15	11	6	$90,000

Chart 4.6: Electrical Systems



4.7 Fire Safety Systems

This section includes components required to maintain occupant safety in the event of fire within the building. These components should be maintained on a regular basis to ensure functionality and prevent premature deterioration. We note the following:

The fire alarm panel and emergency generator is tested and serviced on an annual/monthly basis. The fire suppression system includes multiple fire pumps and fire jockey pump station. Eventual replacement of the generator will be required and costs have been included in the study.

The alarm system is located throughout the building on each floor and is comprised of pull stations, horn strobes and smoke detectors / heat sensors. Replacement allowance costs of the current devices is included but does not include the cost for replacement of the wiring as it is expected to outlast the term of this study. A partial allowance for wall repairs has been included in the budget; however, we have assumed that replacement of components would occur in conjunction with interior renovations. The common area sprinkler system has been included to repair isolated leaks, however, the complete allowance may not be required over the term of the study.

Photograph 27: Fire Jockey Pump/Panel.

Photograph 28: Emergency Generator.

Table 4.7: Fire Safety Systems

FIRE SAFETY SYSTEMS		Cond.	Expenditure ($)	Spread (Yrs)	Budget ($/yr)	Expected Life (Yrs)	Adjusted Age (Yrs)	Remaining (Yrs)	Total Cost
4.7.1	Fire Alarm System	Good/Fair	$40,000	2	$20,000	20	0	11	$40,000
4.7.2	Fire Alarm System CRU	Good/Fair	$10,000	2	$5,000	20	9	11	$10,000
4.7.3	Smoke and Heat Detectors	Fair	$35,000	1	$35,000	10	9	5	$105,000
4.7.4	Smoke and Heat Detectors CRU	Fair	$35,000	1	$35,000	10	5	5	$105,000
4.7.5	Emergency Generator	Good	$60,000	2	$30,000	25	5	16	$60,000
4.7.6	Fire Jockey Pump	Good/Fair	$20,000	1	$20,000	25	9	16	$20,000
4.7.7	Buidling Sprinkler System-Allowance	Good	$400,000	2	$200,000	45	9	36	$0

4.8 Elevator Systems

We understand that the condominium currently has an elevator maintenance contract with a local service provider, which is intended to cover repair or replacement of various elevator equipment and elements as necessary. This does not include finishes to the cabs or doors, therefore an allowance is provided for refinishing these areas.

The tower contains four cable elevator systems and were operational during our review. Ongoing repairs and maintenance to the elevators is required for the system to achieve its anticipated service life. The following replacement costs include the motors, controls, cables and associated electrical work.

The interior surfaces of the elevator car will be subject to every day wear from normal use and will require frequent maintenance. The current maintenance contract does not include finishes to the cab or doors, therefore an allowance is provided for refinishing these areas. The frequency of the elevator cab finish replacement will highly depend on the level and type of use. Additional funds may be required if cab finish replacement is required sooner than projected.

Table 4.8: Elevator Systems

ELEVATOR SYSTEMS		Cond.	Expenditure ($)	Spread (Yrs)	Budget ($/yr)	Expected Life (Yrs)	Adjusted Age (Yrs)	Remaining (Yrs)	Total Cost
4.8.1	Elevator Motors and Controls	Good/Fair	$400,000	2	$200,000	30	11	19	$400,000
4.8.2	Elevator Cab Contingency	Good/Fair	$40,000	1	$40,000	20	11	9	$40,000

4.9 Miscellaneous Items

The following miscellaneous items have been included in the reserve fund study. An allowance to replace site fencing, as well as the various planters located throughout plaza areas. This budget is not intended to perform annual landscaping maintenance in select planters, this is assumed to be covered in the operations and maintenance budgets.

Table 4.9: Miscellaneous

EXTERIOR LANDSCAPE & MISCELLANEOUS		Cond.	Expenditure ($)	Spread (Yrs)	Budget ($/yr)	Expected Life (Yrs)	Adjusted Age (Yrs)	Remaining (Yrs)	Total Cost
4.9.1	Reserve Fund Study	Good	$8,000	1	$8,000	5	0	5	$40,000
4.9.2	Fencing	Good	$20,000	1	$20,000	25	9	16	$20,000

5.0 DISCUSSION

The following Summary Table lists all proposed major capital items included in calculating the annual contributions. The summary includes the current costs of the work, expected service life, present age and the estimated remaining life.

Cash flow projections are presented for the Corporation's review. The projections calculate the closing balances and required contributions for the next 25 years of the building's life. In accordance with the Condominium Property Act, the Corporation must select and approve a cash flow projection and develop a plan for adequately funding and maintaining the reserve fund. These amounts are designated for capital expenditures and allocated in the reserve fund. These funds are in addition to other condominium fees which the Corporation may normally assess for maintenance and operations.

As there are numerous factors that can affect the longevity and performance of a component, it is difficult to accurately predict the anticipated expenditures over the 25-year period. In some cases, components could require replacement earlier or later than what is noted in this document. It is therefore essential that the Corporation understand that the reserve fund report should be used to establish fees and expenditures for the first three to five years (note that the legislation requires that the plan be updated at a period not to exceed five years). Annual contributions could then be adjusted as required.

In addition, the Corporation may wish to consider updating only the financial calculations for the reserve fund annually, similar to updating the maintenance and operating budgets. This would consist of recording the actual work performed in that year, updating the costs and possibly modifying the expenditures in the short term.

We have assumed that as of the 2016 year end, the balance in the reserve fund will be approximately $752,468.00 (as of March, 2017). We have tried to maintain a minimum fund balance of $200,000 (increased for inflation) throughout the 25 year period where possible.

Table 5.1: Summary Table

BUILDING ENVELOPE AND EXTERIOR ITEMS		Cond.	Expenditure ($)	Spread (Yrs)	Budget ($/yr)	Expected Life (Yrs)	Adjusted Age (Yrs)	Remaining (Yrs)	Total Cost
4.1.1	Window/Glazing - Replacement	Good/Fair	$2,484,000	4	$621,000	40	10	30	$0
4.1.2	Window/ Glazing - Restoration	Good/Fair	$248,000	1	$248,000	20	10	10	$248,000
4.1.3	EIFS Cladding - Replacement	Good/Fair	$1,506,000	4	$376,500	40	10	30	$0
4.1.4	EIFS Cladding - Restoration	Good/Fair	$226,000	1	$226,000	20	10	10	$226,000
4.1.5	Brick Cladding - Replacement	Good/Fair	$1,372,000	4	$343,000	55	10	45	$0
4.1.6	Brick Cladding - Restoration	Good/Fair	$206,000	1	$206,000	20	10	10	$206,000
4.1.7	Metal Cladding - Replacement	Good/Fair	$1,506,000	4	$376,500	40	10	30	$0
4.1.8	Metal Cladding - Restoration	Good/Fair	$226,000	1	$226,000	20	10	10	$226,000
4.1.9	Balcony Railing - Replacement	Good/Fair	$587,000	2	$293,500	35	10	25	$293,500
4.1.10	Balcony Railing - Restoration	Fair	$88,000	1	$88,000	15	12	3	$176,000
4.1.11	Exterior Door - Replacement	Good/Fair	$838,000	2	$419,000	35	10	25	$419,000
4.1.13	Refuse Room Doors - Replacement	Good/Fair	$45,000	1	$45,000	15	10	5	$90,000
4.1.14	Soffit and Metal Flashing - Restoration	Good/Fair	$156,000	1	$156,000	40	10	30	$0
4.1.15	Painting Allowance	Good/Fair	$50,000	2	$25,000	15	10	5	$100,000
4.1.16	Sealant Restoration Allowance	Good/Fair	$41,000	1	$41,000	15	10	5	$82,000
4.1.17	Main Entrance/Awning Restoration	Good/Fair	$280,000	1	$280,000	30	10	20	$280,000
ROOFING		Cond.	Expenditure ($)	Spread (Yrs)	Budget ($/yr)	Expected Life (Yrs)	Adjusted Age (Yrs)	Remaining (Yrs)	Total Cost
4.2.1	Tower Roofing	Good/Fair	$390,000	1	$390,000	25	10	15	$390,000
4.2.2	Tower Roofing - Restoration	Good/Fair	$65,000	1	$65,000	15	14	1	$70,000
4.2.3	Penthouse Roofing	Good/Fair	$70,000	1	$70,000	25	10	15	$70,000
4.2.4	Roof Top Patios	Good/Fair	$150,000	1	$150,000	30	9	21	$500,000
4.2.5	2nd/3rd Floor Waterproofing	Fair	$500,000	1	$500,000	30	9	21	$500,000
INTERIOR		Cond.	Expenditure ($)	Spread (Yrs)	Budget ($/yr)	Expected Life (Yrs)	Adjusted Age (Yrs)	Remaining (Yrs)	Total Cost
4.3.1	Common Area Hallways/Stairwells	Good/Fair	$825,000	7	$117,857	25	11	14	$825,000
4.3.2	Common Area Rooms	Good/Fair	$150,000	1	$150,000	25	11	14	$150,000
4.3.3	Common Area Doors	Good/Fair	$357,000	7	$51,000	45	9	36	$0
4.3.4	Lobby	Fair	$85,000	1	$85,000	20	12	8	$85,000
4.3.5	Furniture Allowance	Good/Fair	$10,000	1	$10,000	15	9	6	$20,000
4.3.6	Exercise Equipment	Good/Fair	$35,000	1	$35,000	15	9	6	$70,000
4.3.7	Bathroom/Change rooms	Good/Fair	$25,000	1	$25,000	15	9	6	$50,000
STRUCTURAL ELEMENTS		Cond.	Expenditure ($)	Spread (Yrs)	Budget ($/yr)	Expected Life (Yrs)	Adjusted Age (Yrs)	Remaining (Yrs)	Total Cost
4.4.1	Tieback Anchor System	Good/Fair	$45,000	1	$45,000	25	10	15	$45,000
4.4.2	Concrete Allowance	Good/Fair	$35,000	1	$35,000	15	7	8	$70,000
4.4.3	Parapet Restoration	Good/Fair	$35,000	1	$35,000	25	24	1	$35,000
MECHANICAL SYSTEMS		Cond.	Expenditure ($)	Spread (Yrs)	Budget ($/yr)	Expected Life (Yrs)	Adjusted Age (Yrs)	Remaining (Yrs)	Total Cost
4.5.1	Heating Boilers	Good/Fair	$65,000	2	$32,500	20	3	17	$65,000
4.5.2	Heating Boilers CRU	Good	$25,000	2	$12,500	20	3	17	$25,000
4.5.3	Boiler Flues	Good/Fair	$15,000	1	$15,000	20	11	9	$15,000
4.5.4	Boiler Flues CRU	Good	$8,000	1	$8,000	20	5	15	$8,000
4.5.5	Heating Pumps and Motors	Fair	$30,000	2	$15,000	15	11	4	$60,000
4.5.6	Heating Pumps and Motors CRU	Good	$10,000	2	$5,000	15	9	6	$20,000
4.5.7	Cushion Tanks	Fair/Poor	$9,000	4	$2,250	15	1	14	$9,000
4.5.8	Cushion Tanks CRU	Good	$5,000	1	$5,000	15	1	14	$5,000
4.5.9	Plate to Plate Exchanger	Good	$40,000	1	$40,000	25	2	23	$40,000
4.5.10	Plate to Plate Exchanger CRU	Good	$8,000	1	$8,000	25	2	23	$8,000
4.5.11	Heating Piping	Fair	$700,000	40	$17,500	30	12	18	$437,500
4.5.12	Heating Piping CRU	Good	$100,000	15	$6,667	30	9	21	$80,000
4.5.13	Unit Heaters	Fair	$21,000	3	$7,000	25	11	14	$21,000
4.5.14	Zone Valves and Thermostats	Good/Fair	$28,000	1	$28,000	20	9	11	$28,000
4.5.15	Zone Valves and Thermostats CRU	Good/Fair	$8,000	1	$8,000	20	9	11	$8,000
4.5.16	Hot Water Boilers *Heaters*	Good/Fair	$20,000	1	$20,000	15	9	6	$40,000
4.5.17	Hot Water Storage Tanks	Fair	$35,000	5	$7,000	15	12	3	$70,000
4.5.18	Hot Water Rec Pumps	Good/Fair	$12,000	1	$12,000	15	9	6	$24,000
4.5.19	Water Piping	Fair	$700,000	40	$17,500	30	12	18	$437,500
4.5.20	Water Piping CRU	Good	$25,000	10	$2,500	30	9	21	$22,500
4.5.21	Exhaust Fans	Fair	$15,000	1	$15,000	15	9	6	$30,000
4.5.23	Underground Services	Good	$200,000	2	$100,000	50	9	41	$0
4.5.24	MUA Hallway Pressurization	Good/Fair	$25,000	1	$25,000	25	9	16	$25,000
4.5.25	Garbage Shut Washdown	Good/Fair	$5,000	1	$5,000	15	9	6	$10,000
4.5.26	Split AC	Good/Fair	$18,000	1	$18,000	22	9	13	$18,000
4.5.27	Condensing Units	Good/Fair	$25,000	10	$2,500	15	9	6	$47,500
4.5.28	Chiller	Good/Fair	$40,000	1	$40,000	20	9	11	$40,000

Table 5.1: Summary Table (Continued)

ELECTRICAL SYSTEMS		Cond.	Expenditure ($)	Spread (Yrs)	Budget ($/yr)	Expected Life (Yrs)	Adjusted Age (Yrs)	Remaining (Yrs)	Total Cost
4.6.1	Lighting System *Interior*	Good/Fair	$40,000	3	$13,333	20	0	11	$40,000
4.6.2	Lighting System *Exterior*	Good/Fair	$22,000	2	$11,000	15	9	6	$44,000
4.6.3	Electrical Distribution	Good/Fair	$250,000	1	$250,000	30	9	21	$250,000
4.6.4	Electrical Distribution CRU	Good/Fair	$50,000	1	$50,000	30	9	21	$50,000
4.6.5	Intercoms	Fair	$15,000	1	$15,000	18	9	7	$30,000
4.6.6	Keyless Access Readers	Fair	$38,000	1	$38,000	18	11	7	$76,000
4.6.7	Video Camera System	Fair	$45,000	1	$45,000	15	11	6	$90,000
FIRE SAFETY SYSTEMS		Cond.	Expenditure ($)	Spread (Yrs)	Budget ($/yr)	Expected Life (Yrs)	Adjusted Age (Yrs)	Remaining (Yrs)	Total Cost
4.7.1	Fire Alarm System	Good/Fair	$40,000	2	$20,000	20	0	11	$40,000
4.7.2	Fire Alarm System CRU	Good/Fair	$10,000	2	$5,000	20	9	11	$10,000
4.7.3	Smoke and Heat Detectors	Fair	$35,000	1	$35,000	10	9	5	$105,000
4.7.4	Smoke and Heat Detectors CRU	Fair	$35,000	1	$35,000	10	5	5	$105,000
4.7.5	Emergency Generator	Good	$60,000	2	$30,000	25	5	16	$60,000
4.7.6	Fire Jockey Pump	Good/Fair	$20,000	1	$20,000	25	9	16	$20,000
4.7.7	Buidling Sprinkler System-Allowance	Good	$400,000	2	$200,000	45	9	36	$0
ELEVATOR SYSTEMS		Cond.	Expenditure ($)	Spread (Yrs)	Budget ($/yr)	Expected Life (Yrs)	Adjusted Age (Yrs)	Remaining (Yrs)	Total Cost
4.8.1	Elevator Motors and Controls	Good/Fair	$400,000	2	$200,000	30	11	19	$400,000
4.8.2	Elevator Cab Contingency	Good/Fair	$40,000	1	$40,000	20	11	9	$40,000
EXTERIOR LANDSCAPE & MISCELLANEOUS		Cond.	Expenditure ($)	Spread (Yrs)	Budget ($/yr)	Expected Life (Yrs)	Adjusted Age (Yrs)	Remaining (Yrs)	Total Cost
4.9.1	Reserve Fund Study	Good	$8,000	1	$8,000	5	0	5	$40,000
4.9.2	Fencing	Good	$20,000	1	$20,000	25	9	16	$20,000
Total Expenditures For 25 Year Period:									**$7,175,000**

Table 5.2: Expenditure Timeline - Years 1 to 10

Item	Description	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
BUILDING ENVELOPE AND EXTERIOR ITEMS											
4.1.1	Window/Glazing - Replacement										
4.1.2	Window/ Glazing - Restoration										$248,000
4.1.3	EIFS Cladding - Replacement										
4.1.4	EIFS Cladding - Restoration										$226,000
4.1.5	Brick Cladding - Replacement										
4.1.6	Brick Cladding - Restoration										$206,000
4.1.7	Metal Cladding - Replacement										
4.1.8	Metal Cladding - Restoration										$226,000
4.1.9	Balcony Railing - Replacement										
4.1.10	Balcony Railing - Restoration			$88,000							
4.1.11	Exterior Door - Replacement										
4.1.14	Soffit and Metal Flashing - Restoration										
4.1.15	Painting Allowance					$25,000	$25,000				
4.1.16	Sealant Restoration Allowance					$41,000					
4.1.17	Main Entrance/Awning Restoration										
ROOFING											
4.2.1	Tower Roofing										
4.2.2	Tower Roofing - Restoration	$65,000									
4.2.3	Penthouse Roofing										
4.2.4	Roof Top Patios										
4.2.5	2nd/3rd Floor Waterproofing										
INTERIOR											
4.3.1	Common Area Hallways/Stairwells										
4.3.2	Common Area Rooms										
4.3.3	Common Area Doors										
4.3.4	Lobby								$85,000		
4.3.5	Furniture Allowance						$10,000				
STRUCTURAL ELEMENTS											
4.4.1	Tieback Anchor System										
4.4.2	Concrete Allowance								$35,000		
4.4.3	Parapet Restoration	$35,000									
MECHANICAL SYSTEMS											
4.5.1	Heating Boilers										
4.5.2	Heating Boilers CRU										
4.5.3	Boiler Flues									$15,000	
4.5.4	Boiler Flues CRU										
4.5.5	Heating Pumps and Motors				$15,000	$15,000					
4.5.6	Heating Pumps and Motors CRU						$5,000	$5,000			
4.5.7	Cushion Tanks										
4.5.8	Cushion Tanks CRU										
4.5.9	Plate to Plate Exchanger										
4.5.10	Plate to Plate Exchanger CRU										
4.5.11	Heating Piping	$17,500	$17,500	$17,500	$17,500	$17,500	$17,500	$17,500	$17,500	$17,500	$17,500
4.5.12	Heating Piping CRU										
4.5.13	Unit Heaters										
4.5.14	Zone Valves and Thermostats										
4.5.15	Zone Valves and Thermostats CRU										
4.5.16	Hot Water Boilers *Heaters*						$20,000				
4.5.17	Hot Water Storage Tanks	$7,000	$7,000	$7,000	$7,000	$7,000					
4.5.18	Hot Water Rec Pumps						$12,000				
4.5.19	Water Piping	$17,500	$17,500	$17,500	$17,500	$17,500	$17,500	$17,500	$17,500	$17,500	$17,500
4.5.20	Water Piping CRU										
4.5.21	Exhaust Fans						$15,000				
4.5.23	Underground Services										
4.5.24	MUA Hallway Pressurization										
4.5.25	Garbage Shut Washdown						$5,000				
4.5.26	Split AC										
4.5.27	Condensing Units		$2,500	$2,500	$2,500	$2,500	$2,500	$2,500	$2,500	$2,500	$2,500
4.5.28	Chiller										
ELECTRICAL SYSTEMS											
4.6.1	Lighting System *Interior*										$13,333
4.6.2	Lighting System *Exterior*						$11,000	$11,000			
4.6.3	Electrical Distribution										
4.6.4	Electrical Distribution CRU										
4.6.5	Intercoms							$15,000			
4.6.6	Keyless Access Readers							$38,000			
4.6.7	Video Camera System						$45,000				
FIRE SAFETY SYSTEMS											
4.7.1	Fire Alarm System										
4.7.2	Fire Alarm System CRU										
4.7.3	Smoke and Heat Detectors					$35,000					
4.7.4	Smoke and Heat Detectors CRU					$35,000					
4.7.5	Emergency Generator										
4.7.6	Fire Jockey Pump										
4.7.7	Buidling Sprinkler System- Allowance										
ELEVATOR SYSTEMS											
4.8.1	Elevator Motors and Controls										
4.8.2	Elevator Cab Contingency									$40,000	
EXTERIOR LANDSCAPE & MISCELLANEOUS											
4.9.1	Reserve Fund Study					$8,000					$8,000
4.9.2	Fencing										
EXPENDITURES PER YEAR											
	Total Expenditure	$142,000	$44,500	$132,500	$59,500	$248,500	$248,500	$106,500	$157,500	$92,500	$964,833
	Total Expenditure Including Inflation	**$142,000**	**$45,034**	**$135,699**	**$61,668**	**$260,644**	**$263,772**	**$114,402**	**$171,216**	**$101,762**	**$1,074,180**

Table 5.2: Expenditure Timeline (Continued) – Years 11 to 18

Item	Description	2027	2028	2029	2030	2031	2032	2033	2034
BUILDING ENVELOPE AND EXTERIOR ITEMS									
4.1.1	Window/Glazing - Replacement								
4.1.2	Window/ Glazing - Restoration								
4.1.3	EIFS Cladding - Replacement								
4.1.4	EIFS Cladding - Restoration								
4.1.5	Brick Cladding - Replacement								
4.1.6	Brick Cladding - Restoration								
4.1.7	Metal Cladding - Replacement								
4.1.8	Metal Cladding - Restoration								
4.1.9	Balcony Railing - Replacement								
4.1.10	Balcony Railing - Restoration								$88,000
4.1.11	Exterior Door - Replacement								
4.1.14	Soffit and Metal Flashing - Restoration								
4.1.15	Painting Allowance								
4.1.16	Sealant Restoration Allowance								
4.1.17	Main Entrance/Awning Restoration								
ROOFING									
4.2.1	Tower Roofing					$390,000			
4.2.2	Tower Roofing - Restoration						$65,000		
4.2.3	Penthouse Roofing					$70,000			
4.2.4	Roof Top Patios								
4.2.5	2nd/3rd Floor Waterproofing								
INTERIOR									
4.3.1	Common Area Hallways/Stairwells	$117,857	$117,857	$117,857	$117,857	$117,857	$117,857	$117,857	
4.3.2	Common Area Rooms				$150,000				
4.3.3	Common Area Doors								
4.3.4	Lobby								
4.3.5	Furniture Allowance								
STRUCTURAL ELEMENTS									
4.4.1	Tieback Anchor System					$45,000			
4.4.2	Concrete Allowance								
4.4.3	Parapet Restoration								
MECHANICAL SYSTEMS									
4.5.1	Heating Boilers							$32,500	$32,500
4.5.2	Heating Boilers CRU							$12,500	$12,500
4.5.3	Boiler Flues								
4.5.4	Boiler Flues CRU					$8,000			
4.5.5	Heating Pumps and Motors								
4.5.6	Heating Pumps and Motors CRU								
4.5.7	Cushion Tanks			$2,250	$2,250	$2,250	$2,250		
4.5.8	Cushion Tanks CRU				$5,000				
4.5.9	Plate to Plate Exchanger								
4.5.10	Plate to Plate Exchanger CRU								
4.5.11	Heating Piping	$17,500	$17,500	$17,500	$17,500	$17,500	$17,500	$17,500	$17,500
4.5.12	Heating Piping CRU				$6,667	$6,667	$6,667	$6,667	$6,667
4.5.13	Unit Heaters			$7,000	$7,000	$7,000			
4.5.14	Zone Valves and Thermostats	$28,000							
4.5.15	Zone Valves and Thermostats CRU	$8,000							
4.5.16	Hot Water Boilers *Heaters*								
4.5.17	Hot Water Storage Tanks						$7,000	$7,000	$7,000
4.5.18	Hot Water Rec Pumps								
4.5.19	Water Piping	$17,500	$17,500	$17,500	$17,500	$17,500	$17,500	$17,500	$17,500
4.5.20	Water Piping CRU							$2,500	$2,500
4.5.21	Exhaust Fans								
4.5.23	Underground Services								
4.5.24	MUA Hallway Pressurization						$25,000		
4.5.25	Garbage Shut Washdown								
4.5.26	Split AC			$18,000					
4.5.27	Condensing Units	$2,500						$2,500	$2,500
4.5.28	Chiller	$40,000							
ELECTRICAL SYSTEMS									
4.6.1	Lighting System *Interior*	$13,333	$13,333						
4.6.2	Lighting System *Exterior*								
4.6.3	Electrical Distribution								
4.6.4	Electrical Distribution CRU								
4.6.5	Intercoms								
4.6.6	Keyless Access Readers								
4.6.7	Video Camera System								
FIRE SAFETY SYSTEMS									
4.7.1	Fire Alarm System	$20,000	$20,000						
4.7.2	Fire Alarm System CRU	$5,000	$5,000						
4.7.3	Smoke and Heat Detectors					$35,000			
4.7.4	Smoke and Heat Detectors CRU					$35,000			
4.7.5	Emergency Generator						$30,000	$30,000	
4.7.6	Fire Jockey Pump						$20,000		
4.7.7	Buidling Sprinkler System- Allowance								
ELEVATOR SYSTEMS									
4.8.1	Elevator Motors and Controls								
4.8.2	Elevator Cab Contingency								
EXTERIOR LANDSCAPE & MISCELLANEOUS									
4.9.1	Reserve Fund Study					$8,000			
4.9.2	Fencing						$20,000		
EXPENDITURES PER YEAR									
	Total Expenditure	$269,690	$191,190	$180,107	$323,774	$759,774	$328,774	$246,524	$186,667
	Total Expenditure Including Inflation	**$303,858**	**$217,998**	**$207,825**	**$378,084**	**$897,866**	**$393,192**	**$298,364**	**$228,631**

Table 5.2: Expenditure Timeline (Continued) – Years 19 to 25

Item	Description	2035	2036	2037	2038	2039	2040	2041
BUILDING ENVELOPE AND EXTERIOR ITEMS								
4.1.1	Window/Glazing - Replacement							
4.1.2	Window/ Glazing - Restoration							
4.1.3	EIFS Cladding - Replacement							
4.1.4	EIFS Cladding - Restoration							
4.1.5	Brick Cladding - Replacement							
4.1.6	Brick Cladding - Restoration							
4.1.7	Metal Cladding - Replacement							
4.1.8	Metal Cladding - Restoration							
4.1.9	Balcony Railing - Replacement							$293,500
4.1.10	Balcony Railing - Restoration							
4.1.11	Exterior Door - Replacement							$419,000
4.1.14	Soffit and Metal Flashing - Restoration							
4.1.15	Painting Allowance		$25,000	$25,000				
4.1.16	Sealant Restoration Allowance		$41,000					
4.1.17	Main Entrance/Awning Restoration		$280,000					
ROOFING								
4.2.1	Tower Roofing							
4.2.2	Tower Roofing - Restoration							
4.2.3	Penthouse Roofing							
4.2.4	Roof Top Patios			$150,000				
4.2.5	2nd/3rd Floor Waterproofing			$500,000				
INTERIOR								
4.3.1	Common Area Hallways/Stairwells							
4.3.2	Common Area Rooms							
4.3.3	Common Area Doors							
4.3.4	Lobby							
4.3.5	Furniture Allowance			$10,000				
STRUCTURAL ELEMENTS								
4.4.1	Tieback Anchor System							
4.4.2	Concrete Allowance					$35,000		
4.4.3	Parapet Restoration							
MECHANICAL SYSTEMS								
4.5.1	Heating Boilers							
4.5.2	Heating Boilers CRU							
4.5.3	Boiler Flues							
4.5.4	Boiler Flues CRU							
4.5.5	Heating Pumps and Motors	$15,000	$15,000					
4.5.6	Heating Pumps and Motors CRU			$5,000	$5,000			
4.5.7	Cushion Tanks							
4.5.8	Cushion Tanks CRU							
4.5.9	Plate to Plate Exchanger					$40,000		
4.5.10	Plate to Plate Exchanger CRU					$8,000		
4.5.11	Heating Piping	$17,500	$17,500	$17,500	$17,500	$17,500	$17,500	$17,500
4.5.12	Heating Piping CRU	$6,667	$6,667	$6,667	$6,667	$6,667	$6,667	$6,667
4.5.13	Unit Heaters							
4.5.14	Zone Valves and Thermostats							
4.5.15	Zone Valves and Thermostats CRU							
4.5.16	Hot Water Boilers *Heaters*			$20,000				
4.5.17	Hot Water Storage Tanks	$7,000	$7,000					
4.5.18	Hot Water Rec Pumps			$12,000				
4.5.19	Water Piping	$17,500	$17,500	$17,500	$17,500	$17,500	$17,500	$17,500
4.5.20	Water Piping CRU	$2,500	$2,500	$2,500	$2,500	$2,500	$2,500	$2,500
4.5.21	Exhaust Fans			$15,000				
4.5.23	Underground Services							
4.5.24	MUA Hallway Pressurization							
4.5.25	Garbage Shut Washdown			$5,000				
4.5.26	Split AC							
4.5.27	Condensing Units	$2,500	$2,500	$2,500	$2,500	$2,500	$2,500	$2,500
4.5.28	Chiller							
ELECTRICAL SYSTEMS								
4.6.1	Lighting System *Interior*							
4.6.2	Lighting System *Exterior*			$11,000	$11,000			
4.6.3	Electrical Distribution			$250,000				
4.6.4	Electrical Distribution CRU			$50,000				
4.6.5	Intercoms							$15,000
4.6.6	Keyless Access Readers							$38,000
4.6.7	Video Camera System			$45,000				
FIRE SAFETY SYSTEMS								
4.7.1	Fire Alarm System							
4.7.2	Fire Alarm System CRU							
4.7.3	Smoke and Heat Detectors							$35,000
4.7.4	Smoke and Heat Detectors CRU							$35,000
4.7.5	Emergency Generator							
4.7.6	Fire Jockey Pump							
4.7.7	Buidling Sprinkler System- Allowance							
ELEVATOR SYSTEMS								
4.8.1	Elevator Motors and Controls	$200,000	$200,000					
4.8.2	Elevator Cab Contingency							
EXTERIOR LANDSCAPE & MISCELLANEOUS								
4.9.1	Reserve Fund Study		$8,000					$8,000
4.9.2	Fencing							
EXPENDITURES PER YEAR								
	Total Expenditure	$268,667	$667,667	$1,207,667	$62,667	$129,667	$46,667	$1,018,167
	Total Expenditure Including Inflation	**$333,014**	**$837,509**	**$1,533,054**	**$80,506**	**$168,578**	**$61,399**	**$1,355,661**

6.0 RECOMMENDATIONS – CASH FLOW PROJECTIONS

6.1 Cash Flow Projection Scenario 1

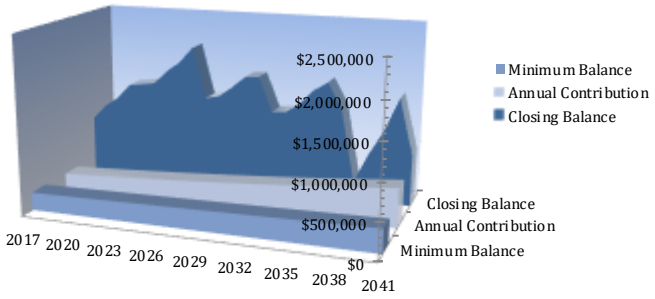
Parameters:		**Projection Information:**	
1. For Year Starting:	2017	**1. Initial Contribution:**	$243,444
2. Interest Rate:	0.5%	**2. Annual Increase Thereafter:**	3.50%
3. Inflation Rate	1.2%		

Comments:

This Scenario Provides Sufficient Funding Until 2046. Additional funding is required in subsequent years.

	Year	Opening Fund Balance	Annual Contribution	Special Assessments	Expenditure	Interest	Closing Balance
1	2017	$752,468	$243,444		$142,000	$4,016	$857,928
2	2018	$857,928	$251,965		$45,034	$4,807	$1,069,665
3	2019	$1,069,665	$260,783		$135,699	$5,661	$1,200,411
4	2020	$1,200,411	$269,911		$61,668	$6,523	$1,415,176
5	2021	$1,415,176	$279,358		$260,644	$7,123	$1,441,012
6	2022	$1,441,012	$289,135		$263,772	$7,268	$1,473,644
7	2023	$1,473,644	$299,255		$114,402	$7,830	$1,666,327
8	2024	$1,666,327	$309,729		$171,216	$8,678	$1,813,518
9	2025	$1,813,518	$320,569		$101,762	$9,615	$2,041,940
10	2026	$2,041,940	$331,789		$1,074,180	$8,354	$1,307,903
11	2027	$1,307,903	$343,402		$303,858	$6,638	$1,354,085
12	2028	$1,354,085	$355,421		$217,998	$7,114	$1,498,622
13	2029	$1,498,622	$367,861		$207,825	$7,893	$1,666,551
14	2030	$1,666,551	$380,736		$378,084	$8,339	$1,677,542
15	2031	$1,677,542	$394,061		$897,866	$7,128	$1,180,866
16	2032	$1,180,866	$407,854		$393,192	$5,941	$1,201,468
17	2033	$1,201,468	$422,128		$298,364	$6,317	$1,331,549
18	2034	$1,331,549	$436,903		$228,631	$7,178	$1,546,999
19	2035	$1,546,999	$452,195		$333,014	$8,033	$1,674,213
20	2036	$1,674,213	$468,021		$837,509	$7,447	$1,312,172
21	2037	$1,312,172	$484,402		$1,533,054	$3,939	$267,460
22	2038	$267,460	$501,356		$80,506	$2,389	$690,700
23	2039	$690,700	$518,904		$168,578	$4,329	$1,045,356
24	2040	$1,045,356	$537,065		$61,399	$6,416	$1,527,438
25	2041	$1,527,438	$555,863		$1,355,661	$5,638	$733,277
TOTALS			**$9,482,109**		**($9,665,915)**	**$164,616**	

Chart 6.1: Cash Flow Projection



7.0 CLOSURE

Please note that the services provided in connection with this project did not include identification, assessment, or presentation of opinions with respect to hazardous or potentially hazardous materials including but not limited to asbestos, mould, mildew or fungus in any form.

Any costs presented are not an estimate but a reasoned allowance based on generally accepted broad unit rates and past experience. Actual costs may vary depending on local market conditions, phasing of the repairs, timing of the repairs, unforeseen conditions due to the hidden nature of the work, and specific use of site or access requirements based on use and occupancy for the facility. Costs are presented in 2016 dollars.

Trusting this study meet your present requirements, we respectfully remain at your service. If you have any questions, please contact our office at your convenience.

Yours truly,
Wall Engineering Ltd.

Elie Filion, B.A.Sc., P.Eng.
Project Engineer
Building Science & Restoration