Building Condition Assessments

Reserve Fund Studies

Building Envelope Investigations

Roofing Investigations

Remedial Design

Construction Inspections

Technical Audits

Energy Audits

Laviolette
building engineering

Comprehensive
Reserve Fund Study

of

Ottawa-Carleton Standard
Condominium Corporation No. 769

Final Report (Revised) Prepared For

Ottawa-Carleton Standard
Condominium Corporation No. 769
% Urbandale Riverside Gate Inc.

Laviolette Building Engineering Inc.
28 Concourse Gate - Unit 2
Ottawa (Nepean), Ontario
Canada K2E 7T7

Tel: (613) 226-4204
Fax: (613) 226-9514
www.lav-eng.ca

August 12, 2009

Job No. L1521

EXECUTIVE SUMMARY

Ottawa-Carleton Standard Condominium Corporation No. 769 was recently constructed and as such, all the common elements are brand new and in excellent condition. Furthermore, since the builder has incorporated "maintenance free" building materials, such as brick masonry and aluminum framed glazing systems, most elements will not require significant repair for many years. As such, OCSCC 769 will have relatively low maintenance and repair costs over its life.

Based on the predicted expenditures listed in the spreadsheet and the current reserve fund finances, the corporation will need to increase reserve fund contributions in order to pay for all foreseeable expenditures over the 30-year horizon of this Study. Accordingly, we recommend increasing reserve fund contributions by $15,000 per year, for five years starting in 2010. After 2014, only annual inflationary increases should be required in order to pay for all anticipated reserve fund expenditures over the next 30 years and beyond.

The following table lists the major common element renewal work scheduled for completion over the next 30 years, not including allowances for mechanical work and amenity room appliances/equipment.

Item Description	Projected Years of Work
TSSA and MOL Directives for Elevator Systems	2012
Interior Painting (Lobby, Corridors, Stairwells and Amenity Rooms)	2017
TSSA Directives for Elevator Systems	2017
Carpets	2019
Parking Garage Suspended Slab Waterproofing	2022
Asphalt Pavement	2022
Concrete Curbs	2022
Balcony Waterproofing Membrane	2022
Exterior Caulking	2022
Overhead Garage Door	2022
Interior Painting (Parking Garage)	2022
Plumbing and Drainage (various)	2022
Ventilation Systems (various)	2022
Door Entry System	2022
Car Cab Interior Refurbishing for Elevator Systems	2022
Interior Painting (Lobby, Corridors, Stairwells and Amenity Rooms)	2027
Domestic Hot Water Recirculation Pumps	2027
Electrical Baseboard Heaters	2027
TSSA Directives for Elevator Systems	2027
Carpets	2031
Grounds Lighting	2032
Exterior Light Fixtures	2032
Interlocking Paver Stones	2032
Wood Fences	2032
Inverted Roofing System	2032
Parking Garage Inverted Roofing System	2032
Ceramic Tile Flooring	2032
Mosaic Ceramic Tile Flooring	2032
Plumbing and Drainage (various)	2032
Ventilation Systems (various)	2032

Heating and Cooling Systems (various)	2032
Fire Alarm Panel	2032
Complete Modernization of all Elevator Systems	2032
Parking Garage Suspended Slab Waterproofing	2037
Chain Link Fences	2037
Balcony Waterproofing Membrane	2037
Exterior Caulking	2037
Sliding Glass Patio Doors	2037
Overhead Garage Door	2037
Interior Painting (Lobby, Corridors, Stairwells and Amenity Rooms)	2037
Interior Painting (Parking Garage)	2037
Domestic Water Booster Pumps	2037
Standpipe Booster Pump	2037
Ventilation Systems (various)	2037
Heating and Cooling Systems (various)	2037
TSSA Directives for Elevator Systems	2037
Car Cab Interior Refurbishing for Elevator Systems	2037

All of the above major capital expenditures reflect normal replacement of common elements as they age.

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1. INTRODUCTION

This Reserve Fund Study is a technical and financial assessment of the common elements of the condominium corporation for the purpose of:

- assessing the condition of the common elements
- forecasting and planning for major capital expenditures over the short and long term
- recommending annual reserve fund appropriations.

In this Reserve Fund Study, we outline our findings regarding the current condition and immediate maintenance and repair requirements for all of the common elements. In addition, we outline the repair and replacement work that we expect will be required over the 30-year period that we examine in this report, including all associated costs. Included in the repair/replacement data is an inventory of the quantities of all common elements that will be subject to replacement work over the life of the corporation. Finally, all anticipated expenditures over the next 30 years are outlined in a detailed spreadsheet, and we provide our recommendation for annual reserve fund appropriations. While this report includes our recommendations for the timing of repair/replacement work and for annual reserve fund contributions, these decisions are ultimately made by the Board of Directors of the condominium corporation.

2. DESCRIPTION OF COMPLEX

Ottawa-Carleton Standard Condominium Corporation No. 769 is a one-year old, 144-unit, 19-storey apartment building located at 3580 Rivergate Way in Ottawa, Ontario. The building structure consists of reinforced concrete slabs, shear walls, foundation walls, columns and footings. The building includes two levels of underground parking. The area above the parking garage roof, which extends past the line of the building, is landscaped and protected by a waterproof membrane system. The exterior facades of the building consist of brick masonry veneer with steel stud back up walls, aluminum and glass curtain wall systems, aluminum windows and sliding glass patio doors. The roofs are protected by inverted waterproofing membrane systems. The building also includes concrete balconies with guard rails consisting of precast concrete panels topped with glass panels within an aluminum frame.

The building's services include the typical provision for electricity, heating and ventilation, communications, and life safety systems. Also, the building contains four elevators. The building is also equipped with various service, storage and amenity rooms, such as the mechanical and electrical rooms, telephone/cable room, electrical and water meter room, storage rooms, garbage/recycling room, hobby room, bicycle storage room, exercise room, swimming pool, library, and party room. The main entrance vestibule, ground floor lobby and elevator lobby of each floor are finished with marble tile and painted walls and ceilings. In addition, most common areas feature wood wainscot accent panels.

The common property elements also include all site services (such as water supply, electrical supply, sewer systems), landscaped elements such as interlock paving stone and asphalt paved walkways, brick masonry and metal barrier walls, wood fences, chain link fences, retaining walls, and shared facilities and amenity spaces with the adjacent condominium OCSCC 667.

3. DESCRIPTION OF WORK ACTIVITIES

3.1 Review of Background Information

The first step of a Reserve Fund Study is to become familiar with the complex, and reviewing all available background information about the corporation is a key part of this first step. Before each project begins, we review (as applicable) all drawings and specifications, the current budget, the Auditor's Reports from past years, the past Reserve Fund Study (if one exists), past consultants' reports prepared over the previous several years, the corporation's Declaration and By-laws, warranties for repair and replacement work completed, the repair and maintenance schedule and records, any lists that the Board may have prepared regarding concerns and/or planned repair/replacement work.

3.2 Condition Assessment and Forecasting of Renewal Work

After the background information is reviewed, we carry out visual inspections of readily accessible common elements. The main purpose of the site inspections is to determine the current condition of the common elements. Assessing the current conditions leads directly to determining the maintenance, repair and replacement work that will be required in the near future. In addition, the site assessment of the common elements provides key information regarding when repair and replacement work will be required over the medium to long term. Such information could include the type and quality of materials, the quality of maintenance, the past rate of deterioration, and the expected rate of deterioration in the future. Together, this information enables us to predict approximately when future repair and replacement work will be required. In addition to assessing when work will be required, the site inspections help establish what type of work will be required, what special conditions will affect the work, and how much the work should cost.

3.3 Calculation of Repair and Replacement Costs

After determining the major repair and replacement work to be required over the next 30 years, next we estimate the costs of all projected work. After determining the nature of each work item, the next step is to take an inventory of the common elements. This inventory work is accomplished by measuring the quantities of the common elements using the drawings and, where necessary, by taking site measurements. For each type of renewal work that is forecasted, the total quantity of the common element is determined (such as area of roofing or siding) so that the total value of this element can be determined later. For an Updated Study, the majority of the quantities would have been determined during completion of an earlier Study, so an Updated Study normally will require quantity calculations only for new findings and recommendations.

Once the type and quantities of the renewal work are known, the last step is to calculate the costs of all renewal work. For most items, the total construction costs are determined by multiplying the total quantity of the element by the expected unit price for the work of concern. For example, if the area of flat roofing at the corporation is 200 m^2 and the typical unit price for flat roof replacement is \$150/m^2, then the total estimated costs for flat roof replacement will be \$30,000. While this seems simple, the key part of reliable cost estimation is that the unit price must be an accurate reflection of what the costs will be for the particular work of concern and at that particular condominium corporation.

To ensure that the unit prices used in the calculations are appropriate, we compare the work at the complex to a data base listing of unit prices that we have compiled from many projects that we have been involved with over several years of experience. This list was compiled, and is regularly updated, using actual contract prices and job specific cost estimates for all types of work that are typically required at a condominium complex. If there is a unique type of repair work for which costs must be estimated, we determine the general nature of the work and employ the assistance of an experienced contractor to estimate the costs of the work that we have laid out. Often, estimates are obtained from two or three contractors to ensure that the estimate is reliable.

All major capital expenditures outlined in the spreadsheet are estimated according to the current year's costs. In addition, all budget estimates account for PST and GST at their current rates.

3.4 Development of the Spreadsheet

The main purpose of the spreadsheet is to determine the recommended annual contributions that should be made to the reserve fund. The spreadsheet assists with this recommendation by providing a vehicle for which all important data can be combined into a calculation of all future costs and contributions.

Reserve Fund Data and Calculations:

The first step in preparing the spreadsheet is to enter all startup financial information, such as year reserve fund balance and the current annual contributions. Since the spreadsheet also requires an amount input as the recommended future contributions, we set that amount to equal the current contributions; simply as an initial trial figure.

Next, we input all budgeted expenditures into the spreadsheet, with each figure placed according to the work to be performed and the year the work is expected to be required. To make the spreadsheet easier to follow, all costs included in the spreadsheet are in today's dollars, with inflation accounted for only after the total yearly expenditures are calculated. (The figure below the first double-line is the total yearly expenditures before inflation, while the next figure down is the total after accounting for inflation.)

With the above data entered, the formulae within the spreadsheet automatically calculate the cash flow for the corporation. For each year, the total amount of money remaining in the reserve fund is shown in two ways. The second figure from the bottom is the amount remaining in future dollars - that is, the "actual" amount remaining in that year if all assumptions are correct. To relate all of these figures to today's value of the funds, the bottom figure represents today's equivalent of that future amount, with inflation removed. (The earned interest for each year is calculated in an iterative way by applying the interest rate to the average reserve fund balance over each year.)

As stated previously, the current contributions are first tried as the future contributions. If this funding level results in sufficient funds to cover all anticipated expenditures, then contributions do not need to be increased. Where sufficient funds do not exist using the current contribution level, then the contributions must be increased to a level that does cover all anticipated costs. Sometimes contributions are immediately increased to the required level, while in other cases the increase may be phased in over a few years.

Often a situation occurs where the contribution level is adequate, on average, but there are certain years when there are insufficient funds. In such cases, priorities have to be established that results in some work being delayed until there will be sufficient funds to pay for the work, but without increasing funding levels further. In extreme cases, the corporation may be significantly short of funds and the only way to raise such funds in time is to recommend a special assessment. While a special assessment is a last resort, it is sometimes required. As with phasing in increases in contributions, it is sometimes possible to levy a special assessment that is collected gradually over a few years.

Explanation of Inflation and Interest Rates:

To ensure that the recommendation for annual contributions is as reliable as possible, inflation and earned interest are accounted for in the spreadsheet. While inflation rates over the past generation have been erratic, inflation has remained in the two per cent range for the past decade. This 2% range for inflation is in line with the historically low inflation rates which existed prior to the 1970's, but there is no guarantee that inflation rates will stay at these low levels. (Inflation in Ontario currently is greater than 2%). Because the current inflation rate is fairly low, the rate is expected to stay fairly low for at least a few years, and because historically inflation has been low, we assume an inflation rate of 2.5% for use in the spreadsheet.

Interest is accounted for in the spreadsheet because unused reserve funds are invested, earning interest that is added to the reserve fund. The Condominium Act requires that interest and other income earned by the reserve fund be deposited to the reserve fund. In keeping with the above principal of assuming that current rates will continue for some time, we typically assume an interest rate of 3.0%. This interest rate is based on the assumption that the reserve funds will be kept in secure, easily accessible investments that do not earn high rates of return compared to higher risk investment instruments.

While inflation and interest rates of 2.5% and 3.0% may not apply over the long term, or may not even reflect the exact conditions that exist today, these rates are reasonable average assumptions for this Reserve Fund Study. First of all, this Reserve Fund Study should be updated regularly, so the current rates will likely be close to the actual rates for at least the next few years. Furthermore, the most important rate of concern is the "real interest rate", that is the difference between the interest rate and the inflation rate. For the spreadsheet in this Reserve Fund Study, the real interest rate is 0.5%. As inflation increases, interest rates usually increase by a greater rate (if the higher inflation rate holds for a significant length of time), thereby increasing the real interest rate. Therefore, a real interest rate of 0.5% (based on 2.5% inflation and 3.0% interest) should be conservative over the long term. While the actual rates will inevitably differ from those used in the spreadsheet, these differences should not adversely affect the reserve fund planning.

3.5 Assumptions and Limitations

This report is based only upon visual inspections and a review of the available background information. No quantitative performance testing of any kind has been performed. Therefore, no review has been made regarding the specific performance level of the common elements, or whether individual building elements meet the Ontario Building Code requirements that applied at the time of construction. Furthermore, it is important to note that the review of drawings is not a review of the project design.

Because of the above limitations of this study, the accuracy of the findings, cost estimates, repair forecasts, life expectancy projections, and our recommendations are limited to the information available at the time of preparing this report. In addition, the timing and costs for all expenditures are based on the assumption that all common elements will be well maintained over the life of the corporation and that all elements will perform according to normal standards. If the complex is not well maintained, the corporation is likely to suffer reduced building element performance and life expectancy, thereby increasing and accelerating repair and replacement costs.

4. FINDINGS AND RECOMMENDATIONS

In this section of the report, we outline our findings and recommendations regarding the common elements, with each category of common element discussed within separate subsections. Specifically, each subsection outlines the following information about the common elements:

- findings regarding their current condition
- quantities (as appropriate)
- description of the expected repair and replacement work that will be required
- estimates of when repair and replacement work will be required
- estimates of the costs of repair and replacement work
- advice regarding general repair or replacement procedures that should be followed.

4.1 Site Services

Section Highlights	Items Included: · storm sewers, sanitary sewers, supply of all utilities · grounds lighting · all exterior light fixtures					
Item Description	General Condition	Estimated Quantities	Major Repair		Complete Renewal	
			Year	Costs	Year	Costs
Catch basins, Sewer Covers	Good	Repairs/adjustments included in costs of related renewal work.				
Sewers & Utilities	Good	No major repairs expected during life of complex.				
Grounds Lighting	Excellent	20 light standards	2032	$4,000	Beyond 2038	$12,000
Exterior Lighting	Excellent	32 light fixtures	as required using annual operating budget		2032	$4,000

The major site services contained within the limits of the corporation's property include the supply of all utilities as well as the storm and sanitary sewer systems. These elements should last the life of the complex (i.e. more than 60+ years) without any major repair or replacement work, so no costs are budgeted specifically for these elements during the 30-year period examined in the spreadsheet. However, the sewers should not be ignored based on the assumption that no problems will develop, since minor sewer problems are not completely uncommon. Instead, the sewer system should be inspected periodically using a remote camera to ensure that everything is functioning properly, and to ensure that minor sewer problems that could develop are detected early, so that major problems are averted or at least minimized. Since these inspections are maintenance related, they are commonly paid for with funds from the operating annual budget. Therefore, no special budgeting has been made for inspection costs. If the sewer inspections reveal problems, repairs should be carried out or a program of periodic sewer flushing should be implemented.

The grounds lighting system is in excellent condition and should provide many more years of service before replacement is required. Generally, two types of grounds lighting renewal is carried out over the service life of the system, which is approximately 30 to 40 years. The first renewal usually involves refinishing the posts as required, replacement/updating of the light fixtures and isolated wiring repairs as required. The second type of grounds lighting renewal generally includes complete replacement of the posts, fixtures, much of the wiring and some of the conduit. Based on the age of the grounds lighting, fixture replacement, isolated wiring repairs and post refinishing is budgeted in 2032 at a cost of $4,000. Complete renewal of the grounds lighting exceeds the 30-year forecast of the spreadsheet, so no funds have been budgeted for their replacement.

Exterior light fixtures located on the east and south building facades, as well as at the main entrance canopy, are new and in excellent condition. These light fixtures will likely last another 25 years or so before replacement is required. Therefore, we have budgeted $4,000 in 2032 to replace all exterior light fixtures.

4.2 Parking Garage

Section Highlights	Items Included: · roof deck waterproofing system incl. landscaping · slab-on-grade concrete · suspended slab waterproofing · stairwell enclosure					
Item Description	General Condition	Estimated Quantities	Major Repair		Complete Renewal	
			Year	Costs	Year	Costs
Roof Deck Waterproofing System (incl. landscaping)	Excellent	2,350 m²	as required using annual operating budget		Beyond 2038	$500,000 (total)
Slab-on-Grade Concrete	Excellent	5,100 m²	as required using annual operating budget		N/A	N/A
Suspended Slab Waterproofing	Excellent	2,450 m²	as required using annual operating budget		2022, 2037	$225,000 (each time)
Aluminum Frame Stairwell Enclosure	Excellent	40 m²	as required using annual operating budget		Beyond 2038	$20,000

The parking garage structure consists of a combination of reinforced concrete walls, columns, and floor slabs. Portions of the parking garage which extend beyond the footprint of the building are protected by a waterproofing membrane. Above the waterproofing membrane, the parking garage roof is finished with various landscape elements, including interlocking paver stones, river washed stone, and grass and sod areas.

The parking garage structure is in excellent condition. Localized minor concrete repairs are expected as the building ages and minor concrete repairs should be carried out, as required, using funds from the annual operating budget.

The garage roof waterproofing membrane system is brand new and is assumed to be in excellent condition. In addition, apart from minor deficiencies noted in our Performance Audit report, landscaping elements installed over the parking garage roof are also in excellent condition. Complete renewal of the parking garage roof waterproofing system and all associated landscaping elements will likely be required after 35 years of service. As such, costs for replacement of the garage roof waterproofing system and associated landscaping should not be required within the 30-year scope covered by this Study. However, maintenance to the landscaping elements, including resetting of isolated paver stones, should be carried-out as required using funds from the annual operating budget.

The suspended slabs and ramp in the parking garage are protected with a waterproof traffic membrane system which is new and in excellent condition. Generally, the waterproofing traffic membrane system should provide a service life of 15 years before replacement is required. As such, we have budgeted $225,000 in 2022, to undertake isolated concrete repairs and replace the membrane. Isolated concrete repairs and replacement of the membrane will again be required around 2037, at which time we have budgeted another $225,000 for a second membrane application.

There is a concrete stairwell that leads from the underground parking garage to the rear landscaped area, located north west of the building. This stairwell is enclosed with an aluminum framed system which should provide 35 to 40 years of service before replacement is required. As such, the aluminum frame stairwell enclosure should not require replacement within the scope of this Study.

4.3 Asphalt Pavement and Exterior Concrete

Section Highlights	Items Included: · asphalt paved laneway and walkways · concrete curbs and precast concrete interlock walkways					
Item Description	General Condition	Estimated Quantities	Major Repair		Complete Renewal	
			Year	Costs	Year	Costs
Asphalt Paved Laneway & Ramp	Excellent	1,200 m^2	as required using annual operating budget		2022	$18,000
Asphalt Paved Walkways	Excellent	80 m^2	as required using annual operating budget		2022	$2,000
Precast Concrete Interlock Walkways	Excellent	50 m^2	as required using annual operating budget		Beyond 2038	$6,500
Concrete Curbs	Excellent	150 m	2022	$3,000	Beyond 2038	$13,000

The asphalt paved laneway and parking garage ramp are new and in excellent condition. The pavement should provide a service life around 15 to 20 years before renewal will be required. Therefore, we have budgeted $18,000 in 2022, to conduct a complete renewal of the asphalt pavement, in the form of an overlay. The asphalt pavement should then provide about 20 more years of service before a reconstruction is required. Hence, no funds have been included in the reserve fund spreadsheet for this work.

In between pavement renewal/reconstruction, asphalt maintenance repairs, such as crack sealing and minor surface repairs should be carried out, as required, in order to prolong the life of the pavement. No funds are included in the reserve fund spreadsheet for these minor maintenance repairs, as it is assumed that the cost of this work will be covered using funds from the annual operating budget.

An asphalt walkway exists along the east property line providing access to the building's rear landscaped area. The asphalt walkway is brand new and in excellent condition. The walkway should provide 15 to 20 years of service before renewal is required. Therefore, we have budgeted $2,000 in 2022, to conduct a complete renewal of the asphalt walkway in conjunction with the asphalt paved laneway and parking garage ramp overlay. The asphalt walkway should provide about 20 years of service before another overlay is required. Hence, no funds have been included in the reserve fund spreadsheet for this work.

The precast concrete interlock walkways exist at south side of the building. The interlock walkways are brand new and in excellent condition. The interlock walkways should provide 35 to 50 years of service before renewal is required. Hence, no funds have been included in the reserve fund spreadsheet for this work.

The cast-in-place concrete curbs along the asphalt laneway are new and in excellent condition. Complete reconstruction of the curbs should not be required for another 40 years or so. However, isolated repairs of approximately 10% to 20% of the curbs will likely be required when repaving is conducted. Therefore, to coincide with the asphalt renewal work, we have budgeted $3,000 in 2022, to replace isolated sections of damaged concrete curbs.

4.4 Landscaped Grounds

Section Highlights	Items Included: · all landscaped areas of the complex, including drainage patterns, shrubs & sod, interlocking pavers, and river washed stone					
Item Description	General Condition	Estimated Quantities	Major Repair		Complete Renewal	
			Year	Costs	Year	Costs
Drainage Patterns	Excellent	No major costs expected during life of complex.				
Interlocking Paver Stones	Excellent	270 m²	2032	$3,000	Included in parking garage roof replacement costs.	
River Washed Stone	Excellent	120 m²	as required using annual operating budget			
Grass & Sod Areas	Excellent	1,400 m²	as required using annual operating budget			

Except for minor deficiencies noted in our Performance Audit report, the landscaped grounds are brand new and in generally excellent condition. Landscape grounds should be maintained regularly using funds from the annual operating budget, excluding the interlock pavers. Localized resetting or replacement of uneven or broken paving stones will occasionally be required and $3,000 has been budgeted for this work in 2032. Replacement of landscape elements should be required around the same time as the parking garage roof membrane renewal. As such, funds have been included in the parking garage roof membrane replacement to renew interlocking paver stones, river washed stone, and other miscellaneous landscape elements.

4.5 Retaining Walls and Fences

Section Highlights	Items Included: · concrete retaining wall · all fences including chain link, aluminum and wood					
Item Description	General Condition	Estimated Quantities	Major Repair		Complete Renewal	
			Year	Costs	Year	Costs
Concrete Retaining Wall	Excellent	50 m	as required using annual operating budget		N/A	N/A
Chain Link Fence	Excellent	200 m	as required using annual operating budget		2037	$8,000
Aluminum Fence	Excellent	10 m	as required using annual operating budget		N/A	N/A
Wood Fence	Excellent	15 m	as required using annual operating budget		2032	$2,700

A concrete retaining wall exists east of the parking garage exterior ramp. This concrete retaining wall is in excellent condition and should not require complete replacement during the life of the building. Minor concrete repairs will likely be required during the parking garage roof deck waterproofing renewal. It is recommended that the concrete be repaired, as required, using funds from the annual operating budget.

A chain link fence exists at the north and east property lines. The fencing is new and in excellent condition. The chain link fence should last approximately 30 years, so replacement is budgeted in 2037, at an estimated cost of $8,000.

An aluminum fence system exists at the east property line, next to the security gate house. This fence is constructed of a combination of stone masonry columns and aluminum fencing. The stone masonry columns should last the life of the building and should not require complete replacement. The aluminum fence should provide 35 to 40 years of service before replacement is required. Due to the limited size of the fence and relatively low replacement cost, it is recommended that the aluminum fence be replaced as required using funds from the annual operating budget.

At the east side of the building there is a wood fence enclosure which is new and in excellent condition. The wood fence should provide reliable service for 25 years before replacement is required. Therefore, we have budgeted $2,700 for the replacement of the wood fence enclosure in 2032.

4.6 Foundation Walls

Section Highlights	Items Included: · cast-in-place foundation walls					
Item Description	General Condition	Estimated Quantities	Major Repair		Complete Renewal	
			Year	Costs	Year	Costs
Foundation Walls	Excellent	N/A	as required using annual operating budget		N/A	N/A

Limited exposed concrete foundation walls appear to be in excellent condition as no significant cracks were noted or reported. Parging and isolated foundation repairs should be carried out as required using funds from the operating budget.

4.7 Balconies & Railings

Section Highlights	Items Included: · balcony waterproofing · balcony concrete repairs · balcony guard rails · balcony precast panels					
Item Description	General Condition	Estimated Quantities	Major Repair		Complete Renewal	
			Year	Costs	Year	Costs
Balcony Waterproofing and Concrete Repairs	N/A	1,200 m²	as required using annual operating budget		2022, 2037	$140,000 (each time)
Balcony Guard Rails	Excellent	1,000 m	as required using annual operating budget		Beyond 2038	$360,000
Balcony Precast Panels	Excellent	190 m²	as required using annual operating budget		N/A	N/A

The cast-in-place concrete balconies are in generally excellent condition. However, the existing balconies are not protected with a waterproofing membrane. If never protected, concrete balconies will eventually suffer deterioration from exposure to moisture, air and chlorides. This exposure causes corrosion of reinforcing steel (and subsequent concrete spalling) as well as freeze/thaw deterioration. In addition, prolonged exposure to moisture and carbon dioxide in the air results in a chemical reaction which reduces the natural alkalinity of the concrete and allows corrosion of the reinforcement and subsequent concrete deterioration to occur. (This condition is called "carbonation" of the concrete.) Carbonation, freeze thaw deterioration and corrosion of reinforcement is an exponential process that over time, can result in significant concrete deterioration and substantial future repair costs.

To protect the balconies and minimize future balcony repairs, it is recommended that an elastomeric waterproofing membrane eventually be applied to all of the balcony slabs. The purpose of the balcony waterproofing membrane is to prevent water and chlorides from being able to penetrate into the concrete, thus significantly reducing the potential for freeze/thaw deterioration, carbonation and corrosion of reinforcement. Since concrete deterioration frequently starts to develop to a noticeable degree when a building is 15 to 20 years old, we recommend that a waterproofing membrane (including minor concrete repairs) be applied to all balconies in 2022 when the building is 15 years old, and $140,000 is budgeted to undertake this work. The balcony membranes should provide approximately 15 years of service before renewal is required, so balcony membrane application is required approximately every 15 years.

Balcony guard rails consist of prefinished aluminum frames with glass panels. The balcony railings are in excellent condition and the railings should provide a full service life of 35 to 40 years before replacement is required. As such, no funds are budgeted in the spreadsheet for balcony railing replacement.

Precast concrete panels surround the exterior perimeter of the cast-in-place concrete balconies. These precast panels should last the life of the building and should not require complete replacement. As such, no funds are budgeted in the spreadsheet for the replacement of the balcony precast panels.

4.8 Cladding

Section Highlights	Items Included: · brick masonry veneer · EIFS · metal siding					
Item Description	General Condition	Estimated Quantities	Major Repair		Complete Renewal	
			Year	Costs	Year	Costs
Brick Masonry Veneer	Excellent	N/A	as required using annual operating budget		N/A	N/A
EIFS	Excellent	40 m²	as required using annual operating budget		Beyond 2038	$10,000
Metal Siding	Excellent	400 m²	as required using annual operating budget		Beyond 2038	$50,000

Brick masonry veneer is in excellent condition, and it should last the life of the building without requiring complete replacement. Accordingly, no funds are budgeted in the spreadsheet for brick masonry veneer replacement or significant repairs. Minor isolated repairs should be carried out as required using funds from the annual operating budget.

Exterior Insulation Finish System (EIFS) exists at the termination of the brick masonry veneer at the north, east and west elevations and, except for minor deficiencies noted in our Performance Audit, the EIFS is in excellent condition. EIFS should provide 35 to 40 years of service before requiring replacement, so replacement of the EIFS should not be required within the scope of this Study.

Vertical metal siding is present on the exterior of the mechanical penthouse walls, and this siding is in excellent condition. The metal siding should provide 40 years of service or more before requiring replacement. As such, replacement of the metal siding should not be required within the scope of this Study.

4.9 Exterior Painting & Caulking

Section Highlights	Items Included: · all exterior painting · all exterior caulking around windows, doors and other elements					
Item Description	General Condition	Estimated Quantities	Major Repair		Complete Renewal	
			Year	Costs	Year	Costs
Exterior Painting	Excellent	N/A	as required using annual operating budget		as required using annual operating budget	
Caulking	Excellent	5,400 m	as required using annual operating budget		2022 2037	$65,000 $50,000

Except for minor deficiencies noted in our Performance Audit report, exterior paint throughout the complex is in excellent condition. Painted elements requiring regular repainting are limited to prefinished aluminum components of the balcony guard rails, various vents and other minor miscellaneous elements. Since exterior painted elements are fairly limited, refinishing of exterior painted elements should be conducted regularly using funds from the annual operating budget.

Exterior caulking within cladding systems (curtain walls and brick masonry) and around windows and doors is in excellent condition and should provide a normal service life of 15 years before requiring complete replacement. Therefore, we have budgeted $65,000 in 2022, to replace all exterior caulking throughout the building. The new caulking should provide approximately 15 years of service before requiring replacement a second time. However, partial replacement of the building's exterior caulking will occur with the replacement of the sliding glass balcony doors. Accordingly, we have budgeted a reduced amount of $50,000 for replacement of remaining exterior caulking in 2037.

4.10 Windows and Doors

Section Highlights	Items Included: · aluminum frame curtain wall system · punched aluminum windows · sliding glass patio doors · aluminum frame storefront type entrance doors · aluminum frame entrance canopy · overhead parking garage door · interior and exterior metal doors · common area wooden doors and unit entrance doors

Item Description	General Condition	Estimated Quantities	Major Repair		Complete Renewal	
			Year	Costs	Year	Costs
Aluminum Frame Curtain Wall System	Excellent	3,900 m²	as required using annual operating budget		Beyond 2038	$2,200,000
Punched Aluminum Windows	Excellent	315 windows	as required using annual operating budget		Beyond 2038	$550,000
Sliding Glass Patio Doors	Excellent	144 doors	as required using annual operating budget		2037	$380,000
Aluminum Frame Storefront Type Entrance Doors	Excellent	1 set of double doors	as required using annual operating budget		Beyond 2038	$15,000
Aluminum Frame Entrance Canopy	Excellent	60 m²	as required using annual operating budget		Beyond 2038	$20,000
Overhead Parking Garage Door	Excellent	1 door	as required using annual operating budget		2022, 2037	$10,000 (each time)
Exterior Metal Service Doors	Excellent	6 doors	as required using annual operating budget		Beyond 2038	$6,000
Interior Metal Service Doors	Excellent	approx. 80 doors	as required using annual operating budget		Beyond 2038	$80,000
Interior Common Area Doors	Excellent	approx. 280 doors	as required using annual operating budget		Beyond 2038	$280,000
Unit Entrance Doors	Excellent	144	as required using annual operating budget		Beyond 2038	$220,000

Aluminum frame curtain walls and punched aluminum windows are brand new and in excellent condition. The curtain walls and windows should provide a service life of 35 to 45 years before replacement is required. As such, replacement of aluminum frame curtain walls and punched aluminum windows should not be required within the 30-year period examined in this Study. Replacement of isolated failed thermopane glazing units will likely be required over the years and such isolated thermopane replacement should be carried out using funds from the annual operating budget.

Aluminum frame sliding glass patio doors exist at all units and these doors are in excellent condition. The sliding glass patio doors should provide a 25 to 30 year service life, after which time replacement will likely be required. As such, $380,000 is budgeted in 2037 to replace all sliding glass patio doors.

Aluminum frame storefront type entrance doors exist at the main entrance to the building. These door systems should provide 35 to 40 years of service before replacement is required. As such, the aluminum frame storefront doors should not require replacement within the scope of this Study.

An aluminum frame entrance canopy exists at the main entrance to the building. This aluminum framed system should provide 35 to 40 years of service before replacement is required. As such, the entrance canopy should not require replacement within the scope of this Study.

One overhead garage door exists at the entrance to the underground parking garage, located east of the building. This door is brand new and is in excellent condition. The overhead door will likely provide a service life of 15 to 20 years, after which time replacement of the door and motor will likely be required. As such, $10,000 is budgeted to replace the overhead door in 2022 and 2037.

Metal service doors throughout the exterior and interior of the building are in excellent condition and should provide 40 to 50 years of service before replacement is required. As such, no funds are included in the spreadsheet for metal service doors. Isolated hardware replacement should be carried out as required using funds from the annual operating budget.

The common area and unit entry doors are solid core wood doors which are in excellent condition, and which should provide 40 to 50 years of service before replacement is required. The common area doors should be repainted in conjunction with corridor repainting, so that the doors continue to provide good aesthetics.

4.11 Roofing

Section Highlights	Items Included: · main inverted roof system · parking garage inverted roof system					
Item Description	General Condition	Estimated Quantities	Major Repair		Complete Renewal	
			Year	Costs	Year	Costs
Main Inverted Roof System	Excellent	1,600 m²	as required using annual operating budget		2032	$250,000
Parking Garage Inverted Roof System	Excellent	60 m²	as required using annual operating budget		2032	$7,000

Both the upper roof of the building and the small parking garage roof consist of inverted roofing systems, which are generally made up of the roof membrane over the concrete roof deck, covered by insulation and gravel ballast. These roofs are brand new and are assumed to be in excellent condition. Inverted roofing systems typically provide a service life of 25 years before replacement is required. Therefore, we have budgeted for replacement of both roofs in 2032, with $257,000 budgeted for this work.

4.12 Interior Finishes

Section Highlights	Items Included: · interior painting, carpets, tile flooring, ceiling tile and wainscot panels · amenity room appliances and equipment					
Item Description	General Condition	Estimated Quantities	Major Repair		Complete Renewal	
			Year	Costs	Year	Costs
Interior Painting (Lobby, Corridors, Stairwells and Amenity Rooms)	Excellent	N/A	as required using annual operating budget		2017, 2027 2037	$115,000 (each time)
Interior Painting (Parking Garage)	Excellent	N/A	as required using annual operating budget		2022, 2037	$155,000 (each time)
Interior Carpets	Excellent	300 m²	as required using annual operating budget		2019, 2031	$18,000 (each time)
Marble Tile	Excellent	700 m²	as required using annual operating budget		Beyond 2038	$130,000
Ceramic Tile	Excellent	300 m²	as required using annual operating budget		2032	$55,000
Mosaic Ceramic Tile	Excellent	30 m²	as required using annual operating budget		2032	$5,200
Acoustical Ceiling Tile	Excellent	570 m²	as required using annual operating budget		N/A	N/A
Wood Wainscot Accent Panels	Excellent	N/A	as required using annual operating budget		N/A	N/A
Amenity Room Appliances and Equipment	Excellent	N/A	2011, 2016, 2021, 2026, 2031, 2036	$2,000 (each time)	N/A	N/A

Repainting of the walls, ceilings and doors throughout the lobby, corridors, stairwells and amenity rooms will generally require renewal every 10 years or so. Therefore, we have budgeted $115,000 to repaint these areas in 2017 and every 10 years thereafter.

Repainting of the walls, ceilings and columns throughout the parking garage will generally require renewal every 15 years or so. As such, $155,000 is budgeted in 2022 and 2037 to repaint the parking garage.

The carpets throughout the amenity rooms are in excellent condition and should provide a service life of 12 years or so depending on service conditions. As such, $18,000 is budgeted in 2019 and 2031 to replace the carpets throughout the amenity rooms.

The marble tile floor throughout the lobby and corridors is in excellent condition, and the marble tile should provide many years of service before replacement is required. As such, no funds are included in the spreadsheet for tile replacement.

The ceramic tile floor throughout the corridor of the basement and at various amenity rooms is in excellent condition, and the ceramic tile should provide a service life of 25 years or so. Therefore, we have budgeted $55,000 to replace the ceramic tile in 2032.

Mosaic ceramic tile exists in the mens and womens steam bath, and this tile is in excellent condition. The mosaic tile should also provide a service life of 25 years before replacement is required. As such, we have budgeted $5,200 to replace the mosaic ceramic tile in 2032.

Acoustical ceiling tile is present throughout various amenity rooms, and the ceiling tile is in excellent condition. These ceiling tiles should last the life of the building without requiring complete replacement. Isolated broken/stained tiles should be replaced, as required, using funds from the annual operating budget.

Wood wainscot accent panels exist at various walls throughout the building, and this wainscot is in excellent condition. These wooden panels should last the life of the building without requiring complete replacement. As such, no funds are included in the spreadsheet for wood wainscot panel replacement.

Various appliances, including an electric fridge and stove, exist in the party room. In addition, various exercise equipment is present in the exercise room. An allowance of $2,000 is included in the spreadsheet every five years for maintenance and eventual replacement of amenity room appliances and equipment.

4.13 Mechanical and Electrical Systems

The building's mechanical and electrical systems were inspected by Levac Robichaud Leclerc and Associates Ltd. and an inventory, condition and replacement costs of all condominium owned mechanical and electrical systems are outlined in Appendix "B", with all costs listed in the reports and included in the spreadsheet. According to the report, all mechanical and electrical systems are in satisfactory condition and no major deficiencies were noted.

As a summary of the costing information included in the mechanical and electrical reports, costs included in the spreadsheet are listed below:

Plumbing and Drainage

- Replacement of gas fired domestic hot water boilers (2 units) in 2032, at a cost of $30,000 each for a total of $60,000.
- Replacement of domestic hot water recirculation pumps (4 units) in 2027, at a cost of $1,800 each for a total of $7,200.
- Replacement of domestic hot water recirculation pump motors (4 units) in 2022, at a cost of $500 each for a total of $2,000.
- Replacement of domestic hot water circulation pumps (2 units) in 2032, at a cost of $2,500 each for a total of $5,000.
- Replacement of domestic hot water circulation pumps motors (2 units) in 2022, at a cost of $1,000 each for a total of $2,000.

- Replacement of domestic water booster pumps (2 units) in 2037, at a cost of $14,800 each for a total of $29,600.
- Replacement of domestic water booster pumps motors (2 units) in 2022, at a cost of $1,500 each for a total of $3,000.
- Replacement of elevator shaft sump pump (4 units) in 2032, at a cost of $2,000 each for a total of $8,000.
- Replacement of elevator shaft sump pump motors (4 units) in 2022, at a cost of $600 each for a total of $2,400.
- Cash allowance of $4,000 every 3 years has been allocated for domestic hot water indirect storage tanks inspection.

Fire Protection Systems

- Replacement of standpipe booster pump (1 unit) in 2037, at a total cost of $19,000.

Ventilation Systems

- Replacement of underground parking exhaust fans (5 units) in 2032, at a cost of $4,000 each for a total of $20,000.
- Replacement of underground parking exhaust fan motors (5 units) in 2022, at a cost of $1,500 each for a total of $7,500.
- Replacement of underground parking supply fans (3 units) in 2032, at a cost of $4,000 each for a total of $12,000.
- Replacement of underground parking supply fan motors (3 units) in 2022, at a cost of $1,500 each for a total of $4,500.
- Replacement of corridor AHU (1 unit) in 2037, at a total cost of $16,000.
- Replacement of corridor AHU motor (1 unit) in 2022, at a total cost of $2,000.
- Replacement of ground floor booster exhaust fan (2 units) in 2037, at a cost of $2,000 each for a total of $4,000.
- Replacement of ground floor booster exhaust fan motor (2 units) in 2022, at a cost of $500 each for a total of $1,000.
- Replacement of basement booster supply fan (2 units) in 2037, at a cost of $2,000 each for a total of $4,000.
- Replacement of basement booster supply fan motor (2 units) in 2022, at a cost of $500 each for a total of $1,000.
- Replacement of roof exhaust fans for typical suite dryer (4 units) in 2037, at a cost of $3,000 each for a total of $12,000.
- Replacement of roof exhaust fans for typical suite dryer (4 units) in 2022, at a cost of $1,000 each for a total of $4,000.
- Replacement of propeller wall exhaust fans (5 units) in 2032, at a cost of $500 each for a total of $2,500.
- Replacement of cabinet exhaust fans (4 units) in 2032, at a cost of $800 each for a total of $3,200.
- Replacement of cabinet exhaust fans motors (4 units) in 2022, at a cost of $300 each for a total of $1,200.

Heating & Cooling Systems

- Replacement of gas fired boilers (4 units) in 2032, at a cost of $40,000 each for a total of $160,000.
- Replacement of heating circulation pumps (8 units) in 2037, at a cost of $4,000 each for a total of $32,000.
- Replacement of cooling tower (1 unit) in 2032, at a total cost of $30,000.
- Replacement of cooling circulation pumps (2 units) in 2037, at a cost of $8,000 each for a total of $16,000.
- Replacement of hot water unit heaters in the parking garage (18 units) in 2032, at a cost of $3,000 each for a total of $54,000.
- Replacement of water source heat pumps (9 units) in 2032, at a cost of $6,000 each for a total of $54,000.

Fire Alarm System

- Replacement of fire alarm panel (1 unit) in 2032, at a total cost of $70,000.

Emergency Power System

- Replacement of emergency diesel generator (1 unit) in 2042, at a total cost of $80,000.

Door Entry Systems

- Replacement of door entry system (1 unit) in 2022, at a total cost of $20,000.

Electric Heating System

- Replacement of electrical baseboard heaters (24 units) in 2027, at a cost of $400 each for a total of $9,600.

4.14 Elevator Systems

Both elevator systems were inspected by Priestman Neilson and Associates and an assessment of the current condition of the elevator systems are outlined in Appendix "C", with all replacement costs listed in the report and included in the spreadsheet. According to the report, the elevators are in satisfactory condition and no major deficiencies were noted.

A summary of the costing information included in the elevator system report are as follows:

Elevator Systems

- Contingency for TSSA and MOL Directives in 2012, at a total cost of $25,000.
- Contingency for TSSA Directives in 2017, 2027 and 2037, at a cost of $20,000 each time.
- Elevator car cab interior refurbishing in 2022 and 2037, at a cost of $85,000 each time.
- Elevator systems modernization in 2032, at a total cost of $700,000.

4.15 Engineering Fees

Potential costs for engineering fees also are included in the spreadsheet. Engineering fees related to the major repair or replacement of common elements should be paid out of the reserve fund, since such fees are directly related to the common element renewal. To account for such costs, a ballpark cost estimate of such fees is included in the spreadsheet for repair items where the services of an engineer are likely to be used. **It is very important to note that the budgeted amounts are only very rough "guesstimates" of fees, based on what the scope of work might be, but actual scopes of work are likely to vary from that assumed.** Therefore, the Board should not expect quotations for services to match the estimates provided, even for work due within the next few years. The intent of including engineering fees is only to ensure that there is some allowance for such fees, because ignoring engineering fees in budgeting could cause the corporation to be underfunded over the long term.

Budgeted amounts for engineering fees are as follows:

- 2022: $15,000 for specifications, tendering and site review of parking garage traffic membrane, balcony membrane, and various mechanical and electrical equipment replacement.
- 2032: $30,000 for specifications, tendering and site review of inverted roofing system and various mechanical and electrical equipment replacement.
- 2037: $35,000 for specifications, tendering and site review of parking garage traffic membrane, balcony membrane, sliding glass patio doors, and various mechanical and electrical equipment replacement.

4.16 Reserve Fund Study Updates

The new Condominium Act requires full Reserve Fund Study Updates (updates based on inspection) be completed no later than every six years, with a Spreadsheet Update (update without inspection) within three years of completing the Full Study Update. In essence, two types of Reserve Fund Study Updates will be required at maximum six-year intervals, with types of the study required alternating. The estimated $5,000 costs for a full Study Update are budgeted in the spreadsheet at six-year intervals in 2008, 2014, 2020, 2026, 2032 and 2038. To reflect the need for a Spreadsheet Update within three years of completing a full Study Update, we have budgeted the estimated $2,500 costs for a Spreadsheet Update every three years after each full Study Update, in 2011, 2017, 2023, 2029 and 2035.

5. CONCLUSIONS & SUMMARY COMMENTS

Ottawa-Carleton Standard Condominium Corporation No. 769 was recently constructed and as such, all the common elements are brand new and in excellent condition. Furthermore, since the builder has incorporated "maintenance free" building materials, such as brick masonry and aluminum framed glazing systems, most elements will not require significant repair for many years. As such, OCSCC 769 will have relatively low maintenance and repair costs over its life.

Based on the predicted expenditures listed in the spreadsheet and the current reserve fund finances, the corporation will need to increase reserve fund contributions in order to pay for all foreseeable expenditures over the 30-year horizon of this Study. Accordingly, we recommend increasing reserve fund contributions by $15,000 per year, for five years starting in 2010. After 2014, only annual inflationary increases should be required in order to pay for all anticipated reserve fund expenditures over the next 30 years and beyond.

Elliott Kiel, Technologist

Steven Laviolette, P. Eng.

APPENDIX A: SUMMARY OF LIFE EXPECTANCIES AND COSTS

Table 1: Summary of Life Expectancies and Costs

Element Description	Approximate Current Age	Normal Life Expectancy	Estimated Life Remaining	Replacement Value
Grounds Lighting	1 year	30 to 40 years	24 years	$4,000
Exterior Light Fixtures	1 year	25 years	24 years	$4,000
Parking Garage Roof Deck Waterproofing System (including Landscaping)	1 year	30 to 35 years	34 years	$500,000 (total)
Parking Garage Suspended Slab Waterproofing	1 year	15 years	14 years	$225,000
Parking Garage Aluminum Frame Stairwell Enclosure	1 year	35 to 40 years	39 years	$20,000
Asphalt Paved Laneway and Ramp	1 year	15 to 20 years	14 years	$18,000
Asphalt Paved Walkways	1 year	15 to 20 years	14 years	$2,000
Precast Concrete Interlock Walkways	1 year	35 to 50 years	49 years	$6,500
Concrete Curbs	1 year	40 years	14 years	$3,000
Interlocking Paver Stones	1 year	40 to 50 years	24 years	$3,000
Chain Link Fences	1 year	30 years	29 years	$8,000
Wood Fences	1 year	25 years	24 years	$2,700
Balcony Waterproofing Membrane	N/A	15 years	N/A	$140,000
Balcony Guard Rails	1 year	35 to 40 years	39 years	$360,000
EIFS (Exterior Insulation Finish System)	1 year	35 to 40 years	39 years	$10,000
Metal Siding	1 year	40 years	39 years	$50,000
Exterior Caulking	1 year	15 years	14 years	$65,000
Aluminum Frame Curtain Wall System	1 year	35 to 45 years	44 years	$2,200,000
Punched Aluminum Windows	1 year	35 to 45 years	44 years	$550,000
Sliding Glass Patio Doors	1 year	25 to 30 years	29 years	$380,000
Aluminum Frame Storefront Type Entrance Doors	1 year	35 to 40 years	39 years	$15,000
Aluminum Frame Entrance Canopy	1 year	35 to 40 years	39 years	$20,000
Overhead Garage Door	1 year	15 years	14 years	$10,000
Exterior Metal Service Doors	1 year	40 to 50 years	49 years	$6,000
Interior Metal Service Doors	1 year	40 to 50 years	49 years	$80,000
Interior Common Area Doors	1 year	40 to 50 years	49 years	$280,000
Unit Entrance Doors	1 year	40 to 50 years	49 years	$220,000
Inverted Roofing System	1 year	25 years	24 years	$250,000

Parking Garage Inverted Roofing System	1 year	25 years	24 years	$7,000
Interior Painting (Lobby, Corridors, Stairwells and Amenity Rooms)	1 year	10 years	9 years	$115,000
Interior Painting (Parking Garage)	1 year	15 years	14 years	$155,000
Carpets	1 year	12 years	11 years	$18,000
Marble Tile Flooring	1 year	40 to 50 years	49 years	$130,000
Ceramic Tile Flooring	1 year	25 years	24 years	$55,000
Mosaic Ceramic Tile Flooring	1 year	25 years	24 years	$5,200
Amenity Room Appliances and Equipment	1 year	varies	varies	$12,000 (total)
<u>Plumbing and Drainage:</u>				
Gas Fired Domestic Hot Water Boilers	1 year	25 years	24 years	$60,000
Domestic Hot Water Recirculation Pumps	1 year	20 years	19 years	$7,200
Domestic Hot Water Recirculation Pump Motors	1 year	25 years	24 years	$2,000
Domestic Hot Water Circulation Pumps	1 year	25 years	24 years	$5,000
Domestic Hot Water Circulation Pump Motors	1 year	15 years	14 years	$2,000
Domestic Water Booster Pumps	1 year	30 years	29 years	$29,600
Domestic Water Booster Pump Motors	1 year	15 years	14 years	$3,000
Elevator Shaft Sump Pump	1 year	25 years	24 years	$8,000
Elevator Shaft Sump Pump Motors	1 year	15 years	14 years	$2,400
<u>Fire Protection Systems:</u>				
Standpipe Booster Pump	1 year	30 years	29 years	$19,000
<u>Ventilation Systems:</u>				
Underground Parking Exhaust Fans	1 year	25 years	24 years	$20,000
Underground Parking Exhaust Fan Motors	1 year	15 years	14 years	$7,500
Underground Parking Supply Fans	1 year	25 years	24 years	$12,000
Underground Parking Supply Fan Motors	1 year	15 years	14 years	$4,500
Corridor AHU	1 year	30 years	29 years	$16,000
Corridor AHU Motor	1 year	15 years	14 years	$2,000
Ground Floor Booster Exhaust Fan	1 year	30 years	29 years	$4,000
Ground Floor Booster Exhaust Fan Motor	1 year	15 years	14 years	$1,000
Basement Booster Supply Fan	1 year	30 years	29 years	$4,000
Basement Booster Supply Fan Motor	1 year	15 years	14 years	$1,000
Roof Exhaust Fans for Typical Suite Dryer	1 year	30 years	29 years	$12,000
Roof Exhaust Fans for Typical Suite Dryer	1 year	15 years	14 years	$4,000
Propeller Wall Exhaust Fans	1 year	25 years	24 years	$2,500
Cabinet Exhaust Fans	1 year	25 years	24 years	$3,200
Cabinet Exhaust Fan Motors	1 year	15 years	14 years	$1,200

Heating and Cooling Systems:				
Gas Fired Boilers	1 year	25 years	24 years	$160,000
Heating Circulation Pumps	1 year	30 years	29 years	$32,000
Cooling Tower	1 year	25 years	24 years	$30,000
Cooling Circulation Pumps	1 year	30 years	29 years	$16,000
Hot Water Unit Heaters in the Parking Garage	1 year	25 years	24 years	$54,000
Water Source Heat Pumps	1 year	25 years	24 years	$54,000
Fire Alarm System:				
Fire Alarm Panel	1 year	25 years	24 years	$70,000
Emergency Power System:				
Emergency Diesel Generator	1 year	35 years	34 years	$80,000
Door Entry Systems:				
Door Entry System	1 year	15 years	14 years	$20,000
Electric Heating System:				
Electrical Baseboard Heaters	1 year	20 years	19 years	$9,600
Elevator Systems:				
Elevator Car Cab Interior Refurbishing	1 year	15 years	14 years	$20,000
Complete Modernization	1 year	25 years	24 years	$700,000

APPENDIX B: MECHANICAL & ELECTRICAL REPORT

LEVAC ROBICHAUD LECLERC ASSOCIATES LTD
ASSOCIÉS LTÉE

Project Managers and Consulting Engineers/Gérants de projets et Ingénieurs conseils

RESERVE FUND STUDY
AND
PERFORMACE AUDIT

MECHANICAL SYSTEM

OCSCC 769
3580 Rivergate Way
Ottawa, Ontario

Project No. 08580

INSPECTION FOR PURPOSE OF THE REPORT PERFORMED ON
August 16, 2008

E-mail: ssoucy@lrl.ca	Fax (613) 446-1427
☑ 1-2884, rue Chamberland Street, Rockland, Ontario K4K 1M6	Tel (613) 446-7777
☐ 1 rue Main St., Suite 540, P.O. Box 414, Hawkesbury, Ontario K6A 2S2	Tel (613) 632-5105
☐ 465 Boule de la Gappe, Bureau 101, Gatineau, Québec, J8T 0A2	Tel (819) 243-3063

PERFORMACE AUDIT AND RESERVE FUND STUDY
MECHANICAL SYSTEMS

1.0 INTRODUCTION

Levac Robichaud Leclerc Associates was retained by Laviolette Building Engineering for the Reserve Fund Study and Performance Audit of Ottawa Carleton Standard Condominium Corporation No. 769, 3580 Rivergate Way, Ottawa, Ontario. The building was constructed in 2006 (2 years old).

The following Study is based on a visual inspection of the mechanical systems carried out on August 1 5, 2008. The survey was based on the field observers' visual observations of representative areas and materials while walking through the subject property. The survey consisted of non-intrusive visual observations, which were readily accessible and easily visible components and systems of the subject property.

The normal life expectancy of the mechanical systems is based on manufacturer's published data and accepted standard in the industry. However, it may vary, depending on preventive maintenance practices and possible partial replacement of the equipment over period of this study. Therefore the life expectancy of this equipment could be extended beyond their normal life expectancy.

2.0 PLUMBING AND DRAINAGE:

2.1 Existing System Description

.1 Sanitary drains from typical suites to municipal sanitary sewer by gravity.

.2 Storm drain from roof and area drain are drained to municipal storm sewer by gravity.

.3 Domestic cold water services is connected to the municipal main, metered, and distributed throughout the building by booster pumps.

.4 A central domestic hot water system has been provided for the building. The system consists of the following equipment:

- .1 Two gas fired boilers and in line circulation pumps, located in the penthouse mechanical room.
- .2 The boilers provide heat to an indirect domestic hot water storage tank located in the same room as the boilers.
- .3 Two re-circulation pumps installed for lower and upper hot water recirculation systems.

.5 Bottom of elevator shafts are equipped with floor drain and connected to elevator sump pits and pumped to municipal sewer.

2.2 FINDINGS AND RECOMMENDATIONS

In general all the plumbing, hot water tanks, boilers, booster pumps and drainage systems appear to be in good working condition and well maintained. It is recommended that the condition of the internal liner and hot water heating tubes be inspected every 3 years in order to ensure that there are no leaks which will result in cross contamination between the hot water heating in the heating tubes and the domestic hot water in the tanks.

2.3 REPLACEMENT COST

Gas Fired Domestic Hot Water Boilers (2 Units)	
Estimated replacement cost per unit	$ 30,000.00
Normal life expectancy	25 years
Estimated remaining service life	23 years
Domestic Hot Water Recirculation Pumps (4 Units)	
Estimated replacement cost per unit	$ 1,800.00
Normal life expectancy	20 years
Estimated remaining service life	18 years
Domestic Hot water Recirculation Pump Motor's (4 Units)	
Estimated replacement cost per unit	$ 500.00
Normal life expectancy	15 years
Estimated remaining service life	13 years
Domestic Hot Water Circulation Pumps (2 Units)	
Estimated replacement cost per unit	$ 2,500.00
Normal life expectancy	25 years
Estimated remaining service life	23 years
Domestic Hot Water Circulation Pumps Motors' (2 Units)	
Estimated replacement cost per unit	$ 1,000.00
Normal life expectancy	15 years
Estimated remaining service life	13 years
Domestic Water Booster Pumps (2 Units)	
Estimated replacement cost per unit	$ 14,800.00
Normal life expectancy	30 years
Estimated remaining service life	28 years
Domestic Water Booster Pumps Motors' (2 Units)	
Estimated replacement cost per unit	$ 1,500.00
Normal life expectancy	15 years
Estimated remaining service life	13 years
Elevator Shaft Sump Pump (4 Units)	
Estimated replacement cost per unit	$ 2,000.00
Normal life expectancy	25 years
Estimated remaining service life	23 years

Elevator Shaft Sump Pump Motors (4 Units)

Estimated replacement cost per unit	$ 600.00
Normal life expectancy	15 years
Estimated remaining service life	13 years

All other components of the system have a longer service life. However, preventive maintenance and minor repairs should be covered by the annual operating/maintenance budget.

Cash allowance of $ 4,000.00 every 3 years for domestic hot water indirect storage tanks inspection.

3.0 FIRE PROTECTION:

3.1 Existing System Description

.1 Fire hose cabinets and fire extinguishers are installed in the typical corridors.

.2 Standpipe booster pump is provided for fire hose cabinets.

3.2 FINDINGS AND RECOMMENDATIONS

In general all the fire protection systems appear to be in good condition. Maintenance in accordance with the manufacturer's recommendations including inspection for the portable fire extinguishers and pumps test run should be performed regularly.

3.3 REPLACEMENT COST

Standpipe Booster Pump (1 Unit)

Estimated replacement cost per unit	$ 19,000.00
Normal life expectancy	30 years
Estimated remaining service life	28 years

All other fire protection components have a longer service life. However, preventive maintenance and minor repairs including sprinkler head replacement, due to water leaks, should be covered by the annual operating/maintenance budget.

4.0 VENTILATION

4.1 Existing System Description

.1 Corridor Pressurization Systems:
An "EngAir" Air Handling Unit (AHU), located in the penthouse mechanical room, is provided for corridor pressurization systems.

.2 Transformer vault ventilation is provided by a wall exhaust fan & transfer grille.

.3 Propeller wall exhaust fans are installed in the penthouse mechanical room, electrical room, electrical vault/meter room, sprinkler room.

.4 Propeller wall exhaust fans, propeller wall supply fans and motorized intake damper are provided for the parking garage ventilation system. The system is controlled by carbon monoxide system.

.5 Four (4) rooftop exhaust fans provide exhaust for clothes dryer of typical suite.

.6 Two (2) rooftop exhaust fans provide exhaust for the garbage room (located on ground floor).

.7 Exhaust fans are provided in each suite.

4.2 FINDINGS AND RECOMMENDATIONS

In general all the ventilation systems appear to be in good working condition.

It was noted that the penthouse mechanical room exhaust fans was very loud. This condition should be monitored closely as to ensure proper function of the exhaust fan and to ensure that there is not excessive wear to the fan and motor. We recommend a inspection by a qualified technician for an imbalance fan and excessive vibration.

4.3 REPLACEMENT COST

Underground parking Exhaust Fans (5 Units)		
Estimated replacement cost per unit	$	4,000.00
Normal life expectancy		25 years
Estimated remaining service life		23 years
Underground parking Exhaust Fan Motors (5 Units)		
Estimated replacement cost per unit	$	1,500.00
Normal life expectancy		15 years
Estimated remaining service life		13 years
Underground parking Supply Fans (3 Units)		
Estimated replacement cost per unit	$	4,000.00
Normal life expectancy		25 years
Estimated remaining service life		23 years
Underground parking Supply Fan Motors (3 Units)		
Estimated replacement cost per unit	$	1,500.00
Normal life expectancy		15 years
Estimated remaining service life		13 years

Corridor AHU (1 Unit)	
Estimated replacement cost per unit	$ 16,000.00
Normal life expectancy	30 years
Estimated remaining service life	28 years
Corridor AHU Motor (1 Unit)	
Estimated replacement cost per unit	$ 2,000.00
Normal life expectancy	15 years
Estimated remaining service life	13 years
Ground Floor Booster Exhaust Fan (2 Units)	
Estimated replacement cost per unit	$ 2,000.00
Normal life expectancy	30 years
Estimated remaining service life	28 years
Ground Floor Booster Exhaust Fan Motor (2 Units)	
Estimated replacement cost per unit	$ 500.00
Normal life expectancy	13 years
Estimated remaining service life	15 years
Basement Booster Supply Fan (2 Units)	
Estimated replacement cost per unit	$ 2,000.00
Normal life expectancy	30 years
Estimated remaining service life	28 years
Basement Booster Supply Fan Motor (2 Units)	
Estimated replacement cost per unit	$ 500.00
Normal life expectancy	15 years
Estimated remaining service life	13 years
Roof Exhaust Fans for Typical Suite Dryer (4 Units)	
Estimated replacement cost per unit	$ 3,000.00
Normal life expectancy	30 years
Estimated remaining service life	28 years
Roof Exhaust Fans for Typical Suite Dryer (4 Units)	
Estimated replacement cost per unit	$ 1,000.00
Normal life expectancy	15 years
Estimated remaining service life	13 years
Propeller Wall Exhaust Fans (5 Units)	
Estimated replacement cost per unit	$ 1,000.00
Normal life expectancy	25 years
Estimated remaining service life	23 years
Propeller Wall Exhaust Fans Motors (5 Units)	
Estimated replacement cost per unit	$ 500.00
Normal life expectancy	15 years
Estimated remaining service life	13 years

Cabinet Exhaust Fans (4 Units)	
Estimated replacement cost per unit	$ 800.00
Normal life expectancy	25 years
Estimated remaining service life	23 years
Cabinet Exhaust Fans Motors (4 Units)	
Estimated replacement cost per unit	$ 300.00
Normal life expectancy	15 years
Estimated remaining service life	13 years

All other components of the system have a longer service life. However, preventive maintenance, minor repairs, regular air filters replacement should be covered by the annual operating/maintenance budget.

5.0 HEATING & COOLING SYSTEMS

5.1 Existing System Description

.1 A total of four gas fired hot water heating boilers, located at the penthouse mechanical room are provided for space heating.

.2 A cooling tower is provided for space cooling.

.3 A heat pump provides heating and cooling in each elevator room.

.4 Water source heat pumps are supplied in public areas for space cooling/heating.

5.2 FINDING AND RECOMMENDATIONS

Based on a visual inspection, in general all the heating and air conditioning systems appear to be in good working condition.

5.3 REPLACEMENT COST

Gas Fired Boilers (4 Units)	
Estimated replacement cost per unit	$ 40,000.00
Normal life expectancy	25 years
Estimated remaining service life	23 years
Heating Circulation Pumps (8 Units)	
Estimated replacement cost per unit	$ 4,000.00
Normal life expectancy	30 years
Estimated remaining service life	28 years

Cooling Tower (1 Unit)	
Estimated replacement cost per unit	$ 30,000.00
Normal life expectancy	25 years
Estimated remaining service life	23 years
Cooling Circulation Pumps (2 Units)	
Estimated replacement cost per unit	$ 8,000.00
Normal life expectancy	30 years
Estimated remaining service life	28 years
Hot Water Unit Heaters in the Parking Garage (18 Units)	
Estimated replacement cost per unit	$ 3,000.00
Normal life expectancy	25 years
Estimated remaining service life	23 years
Water Source Heat Pumps (9 Units)	
Estimated replacement cost per unit	$ 6,000.00
Normal life expectancy	25 years
Estimated remaining service life	23 years

All other components of the system have a longer service life. However, preventive maintenance, minor repairs, regular air filters replacement should be covered by the annual operating/maintenance budget.

LEVAC ROBICHAUD LECLERC ASSOCIATES LTD
ASSOCIÉS LTÉE

Project Managers and Consulting Engineers/Gérants de projets et Ingénieurs conseils

RESERVE FUND STUDY
AND
PERFORMACE AUDIT

ELECTRICAL SYSTEM

OCSCC 769
3580 Rivergate Way
Ottawa, Ontario

Project No. 08580

INSPECTION FOR PURPOSE OF THE REPORT PERFORMED ON
August 16, 2008

E-mail: ssoucy@lrl.ca	Fax (613) 446-1427
☑ 1-2884, rue Chamberland Street, Rockland, Ontario K4K 1M6	Tel (613) 446-7777
☐ 1 rue Main St., Suite 540, P.O. Box 414, Hawkesbury, Ontario K6A 2S2	Tel (613) 632-5105
☐ 465 Boule de la Gappe, Bureau 101, Gatineau, Québec, J8T 0A2	Tel (819) 243-3063

PERFORMANCE AUDIT AND RESERVE FUND STUDY
ELECTRICAL SYSTEMS

1.0 INTRODUCTION

Levac Robichaud Leclerc Associates was retained by Laviolette Building Engineering for the Reserve Fund Study and Performance Audit of Ottawa Carleton Standard Condominium Corporation No. 769, 3580 Rivergate Way, Ottawa, Ontario. The building was constructed in 2006 (2 years old).

The following Study is based on a visual inspection of the electrical systems carried out on August 15, 2008. The survey was based on the field observers' visual observations of representative areas and materials while walking through the subject property. The survey consisted of non-intrusive visual observations, which were readily accessible and easily visible components and systems of the subject property.

The normal life expectancy of the electrical systems is based on manufacturer's published data and accepted standard in the industry. However, it may vary, depending on preventive maintenance practices and possible partial replacement of the equipment over period of this study. Therefore the life expectancy of this equipment could be extended beyond their normal life expectancy.

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2.0 ELECTRICAL DISTRIBUTIONS

2.1 Existing System Description

.1 Incoming secondary electrical powers for the building are rated at 347/575 volts, 3-phase, 4-wire, 2000 amp.

.2 Transformers, electrical panels with circuit breakers and disconnect switches systems (120/208 volt, 120/240 volt) are provided for electrical load distribution system.

.4 Cable Television, telephone equipment and enter phone entry system are also located in the basement and penthouse bell room.

.5 Receptacles:
An adequate quantity of 120V, 15 Amp duplex receptacles are provided in all common areas, corridors and utility rooms.

2.2 FINDING AND RECOMMENDATIONS

In general all the electrical distribution systems appear to be in good working condition.
It is recommended that the electrical systems should be maintained regularly. A preventive maintenance should be performed according to the manufacturer's recommendations, to ensure that the systems remain in good working condition at all times.

2.3 REPLACEMENT COST

All electrical components have service live expectancy between 30 to 40 years. They are not necessary to be replaced at the end of the service life expectancy as noted above.

Circuit breakers replacement in the distribution panels, minor repairs and regular maintenance if required should be included in the annual operating/maintenance budget.

3.0 LIGHTING SYSTEMS:

3.1 Existing System Description

.1 Lighting in the main corridors, common area, lobby and utility rooms consist of a combination of incandescent lights, wall lights and fluorescent valance lights.

3.2 FINDING AND RECOMMENDATIONS

Based on a visual inspection, in general all the lighting systems appear to be in good condition and well maintained.
It is recommend to keep a list of all particular lamps in common areas be replaced by the maintenance staff. The list can then be utilized to purchase a number of replacement lamps, which can be kept in storage and can be available at any time.

3.3 REPLACEMENT COST

Over the period of this study, a number of lamps installed through out the building will require replacement. The replacement cost can be estimated based upon the manufacturers' life expectancies of each of the lamps. The cost of lamp replacement could be covered by the annual operating budget.

4.0 FIRE ALARM SYSTEM

4.1 Existing System Description

The fire alarm system comprises the following elements:

.1 The building is equipped with a fire alarm main panel beside the main lobby fire panel room and annunciator panel in the main vestibule.

.2 Manual pull stations and communication hand sets are provided at each exit from the building and at stairwells on all typical floors.

.3 Heat detectors are located in the utility rooms.

.4 Fire alarm audible devices and communication speakers are provided throughout the building corridors.

4.2 FINDING AND RECOMMENDATIONS

Based on a visual inspection, in general the fire alarm system appears to be in good condition. No major deficiencies were noted.
However, preventive maintenance, minor repairs, smoke/heat detector/battery back-up replacement as required and ULC 536 annual test as required by the Code.

The regular preventive maintenance of all the fire alarm components/equipments are recommended to ensure that all of the life safety systems are remain active in all times.

4.3 REPLACEMENT COST

Fire Alarm Panel (1 Unit)

Estimated replacement cost per unit	$ 70,000.00
Normal life expectancy	25 years
Estimated remaining service life	23 years

All other components of the system have a longer service life. However, preventive maintenance, minor repairs, smoke/heat detector/battery back-up replacement as required and ULC 536 annual test as required by the Code should be covered by the annual operating/maintenance budget.

5.0 EMERGENCY POWER SYSTEM

5.1 Existing System Description

A diesel emergency power generator, "Kohler", 301KW, 347/600 Volt, is provided for emergency power requirements for the building.

5.2 FINDING AND RECOMMENDATIONS

Based on a visual inspection, in general all the emergency power systems appear to be in good condition and working properly. No major deficiencies were noted

A regular preventive inspection and maintenance of the battery pack unit, in accordance with the manufacturers recommendations, are recommended to ensure that all system remain active working condition at all time.

5.3 REPLACEMENT COST

Emergency Diesel Generator (1 Unit)

Estimated replacement cost per unit	$ 80,000.00
Normal life expectancy	35 years
Estimated remaining service life	33 years

All components of the system have a longer service life. However, preventive maintenance including diesel engine overhaul requirement as per manufacturer's recommendation should be covered by the annual operating/maintenance budget.

6.0 DOOR ENTRY SYSTEMS

6.1 Existing System Description

The building is equipped with an enter phone door entry system, located in the main entrance vestibules.

6.2 FINDING AND RECOMMENDATIONS

Based on a visual inspection, in general the door entry system appears to be in good condition and well maintained. No major deficiencies were noted.

It is recommended that regular inspections and maintenance according to the manufacturers recommendations to ensure a proper working system at all times.

6.3 REPLACEMENT COST

Door Entry System (1 Unit)	
Estimated replacement cost per unit	$ 20,000.00
Normal life expectancy	15 years
Estimated remaining service life	13 years

All other components of the system have a longer service life. However, preventive maintenance and components replacement should be covered by the annual operating/maintenance budget.

7.0 ELECTRIC HEATING SYSTEM

7.1 Existing System Description

The electric baseboard heaters are provided in the common element areas and vestibules.

7.2 FINDING AND RECOMMENDATIONS

Based on a visual inspection, in general the heating system appears to be in good condition and well maintained.

It is recommended that regular inspections and maintenance according to the manufacturers recommendations to ensure a proper working system at all times.

7.3 REPLACEMENT COST

Electrical baseboard Heaters (24 Units)

Estimated replacement cost per unit	$	400.00
Normal life expectancy		20 years
Estimated remaining service life		18 years

Preventive maintenance should be performed in accordance with the manufacturer's recommendations to ensure that the systems remain in good working condition at all times.

APPENDIX C: ELEVATOR SYSTEMS REPORT

An inspection of the elevating devices at

3580 Rivergate Way ~ OCSCC No. 769

was carried out on September 23 & 25, 2008

The purpose of the inspection was to:

1. Evaluate overall condition of all hoistway and machine room equipment.
2. Inspect for compliance with the Ontario Building Code and B44-00 Safety Code for Elevators
3. Inspect and comment on the quality of the installation and the performance of the equipment
4. Provide recommendations for future maintenance of the Elevators

DESCRIPTION OF ELEVATOR SYSTEMS

The elevator system at Riverside Gate, 3580 Rivergate Way consists of **four** Geared Overhead Traction Variable Voltage Variable Frequency passenger elevators as described below.

Manufacturer	ThyssenKrupp Elevator
Maintenance Contractor	ThyssenKrupp Elevator
Installation Date	2006 - 07
Classification	Passenger
TSSA Installation Numbers	East Side 83978 - 9 West Side 83980 -01
Capacity (lbs)	2500
Speed (Frpm)	500
Machine Type	ThyssenKrupp GD-1 Geared Overhead Traction
Type of Operation	Duplex Selective Collective
Car Door Operator	ThyssenKrupp HD-03
Door Type	Single Slide
Door Width	42"
Car Door Re-Opening Device	Electronic Detector
No. and Size of Ropes	6 x 5/8"
Hoist Rope Fastenings	Wedge Clamp
No. of Stops	20
Power Supply	600 VAC
Emergency Recall	Automatic and Manual
Emergency Power	Provided
Firefighter's Elevator	Number 1&3 - *as per TSSA design submission*

EXISTING CONDITIONS

MACHINE ROOM CONTROL EQUIPMENT

The elevator control equipment is a ThyssenKrupp TAC 50 solid state product. The control equipment provides a computerized dispatching and features all of the latest safety features available to the elevator industry at this time.

The TAC 50 product is a quality controller, however it is considered proprietary in nature. This being the case, ThyssenKrupp is the only company that can properly maintain this type of control, therefore, obtaining competitive maintenance pricing in the future is not an option.

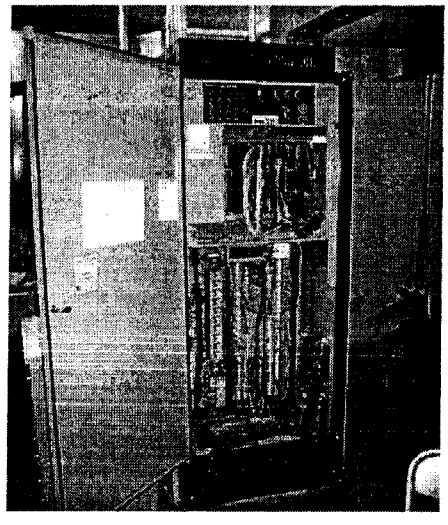
We are not aware of any other elevator maintenance contractors in the Ottawa area that can properly and safely maintain the TAC 50 controller. We would recommend that ThyssenKrupp continue to maintain this equipment now, and in the future.

All elevators are equipped with manual and automatic emergency recall and in car emergency service. Emergency power has been provided for all elevators.

The existing control equipment is a quality product. With proper preventive maintenance being carried out on this control equipment it should provide acceptable service for another fifteen to twenty years, **as long as replacement components are still available.**

The elevator machine rooms were cool at the time of our inspection. There appears to be sufficient cooling in each elevator machine room.

ThyssenKrupp Elevator
TAC 50 Controller



Existing Conditions - cont'd

DRIVE EQUIPMENT

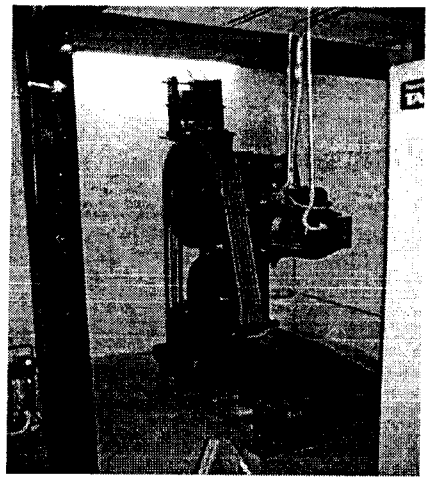
The existing drive equipment consists of ThyssenKrupp Model GD-1 geared machines, ThyssenKrupp variable frequency hoist motors and solid state motor drives. These major components are standard products from the ThyssenKrupp USA factory. During our inspection we did not notice any unusual noises or vibrations emanating from the geared machines, however, we could see some vibration on the hoist ropes on two elevators. There is also a slight oil leak on the #3 geared machine, as verified by the oil on the machine room floor under the machine.

There appears to be some new holes drilled recently in the deflector sheave supporting beams which would indicate that ThyssenKrupp has re-aligned the deflector sheaves slightly from the original installation. Also, it appears that some of the geared machines are fastened slightly different from each other. These above situations do not reflect the quality of the product, however they appear to be installation deficiencies. ThyssenKrupp should thoroughly inspect all machines and fastenings to ensure that the machines and sheaves are installed completely in accordance with the ThyssenKrupp Elevator installation manuals.

As stated earlier, the ThyssenKrupp Engineer and service technician are on-site troubleshooting all elevators to try and improve the ride quality.

The geared machines are equipped with a double brake which provides for UP overspeed and Uncontrolled movement of the car and counterweight.

With all identified deficiencies corrected in an acceptable manner, and with proper preventive maintenance being carried out on the drive equipment in the future, it should provide acceptable service for another fifteen to twenty years, as long as replacement components are available.



ThyssenKrupp Elevator
GD-1 Geared Machine

Existing Conditions - cont'd

CAR AND HALL FIXTURES AND INDICATORS

All of the car and hall button fixtures are the ThyssenKrupp stainless steel product line and comply with current Barrier Free Design requirements. Replacement components for the fixtures are readily available from ThyssenKrupp Elevator. The car operating buttons feature braille and tactile identification.

The car and hall position indicators are the standard ThyssenKrupp dot matrix type. Each elevator is equipped with a verbal floor annunciation device.

CAB INTERIORS

The custom cab interiors feature dark wooden panels on all three walls. The front of the elevator and the car doors have been clad with stainless steel. Bronze tubular handrails have been installed on all three sides. Circular pot lights have been installed in the satin bronze ceiling panels. A safety mirror has been installed on the rear walls above the handrails. The flooring in each elevator cab features marble tiles with a brass inlay.

All cabs features high ceilings to allow for the movement of large pieces of furniture.

There are some minor scratches apparent on the inside of the car door on Elevator #1.

CAR AND HOISTWAY DOOR OPERATOR

The ThyssenKrupp Model HD-03 car door operator controls the car and hoistway door operation. The HD-03 operator is a quality product and should provide years of acceptable service if properly maintained.

The hoistway door locking devices are ThyssenKrupp Model 168. These are quality door locking devices.

The hoistway doors are closed by spirator closers which when adjusted properly provide reliable and consistent operation.

Existing Conditions - cont'd

HOISTWAY EQUIPMENT

The hoistways and car tops are relatively dirty and dusty from construction in the building. There are used elevator parts, rags and debris on most of the car tops.

Dusty Car Top with Rags

Also, there is an accumulation of dust in the elevator machine room on the front and rear of the solid state control equipment.

When all construction in the building is completed, the complete hoistways, car tops and pits should be thoroughly cleaned down. All control equipment in the elevator machine room should be vacuumed out. The elevator machine room floor should be painted after all construction is completed.

Overall, the elevator pit equipment is in good condition and has been installed in an acceptable manner.

A close inspection of the main and counterweight rails in the pit indicates that all rails are resting on the pit channels. Because this is a new building, it is bound to settle somewhat over the next few years. We would recommend that approximately 1" to 2" of the bottom of the rails be cut off to allow the rails to compress with the building and not buckle if and when the building settles.

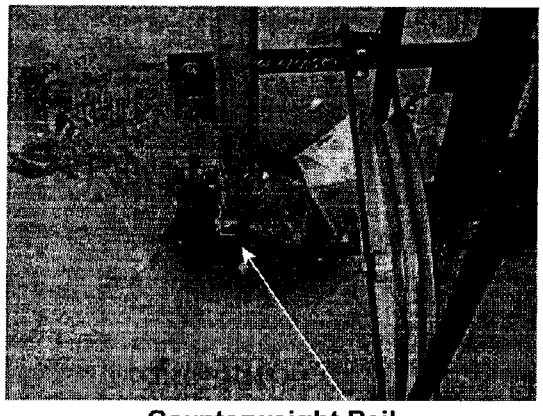
The main guide rails for all elevators are the standard "T" shape steel rail. However, the counterweight rails are a formed metal "U" shaped rail known as an Omega rail. Omega rails are common to ThyssenKrupp Elevator whereas most Companies use "T" shaped counterweight rails. The roller guides on the Omega rails are equipped with small 2 5/8" rollers which appear to be causing some of the noise problems with the elevator ride. We noted numerous new and used counterweight rollers in the elevator machine rooms, which would lead one to believe that many of the rollers have been or will be replaced.

Existing Conditions - Hoistway Equipment - cont'd

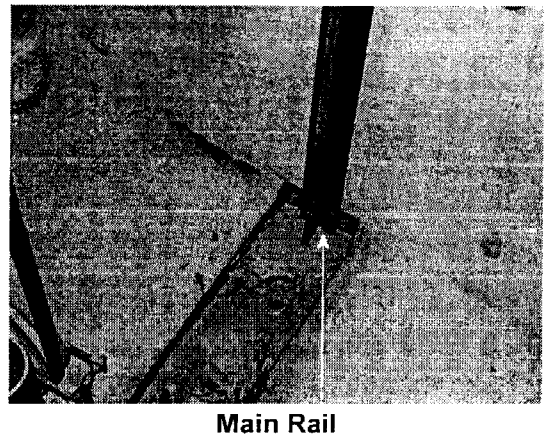
Also, it appears that the counterweight weights are not securely fastened in all counterweights and could contribute to a noisy ride in the elevator.

We have noted these deficiencies in the report and all should be corrected by ThyssenKrupp Elevator.

There is a slight accumulation of water on the pit floor under elevator #4. There is not a significant amount at this time, but it should be monitored in the future.



Counterweight Rail
Resting on Buffer Channel in Pit



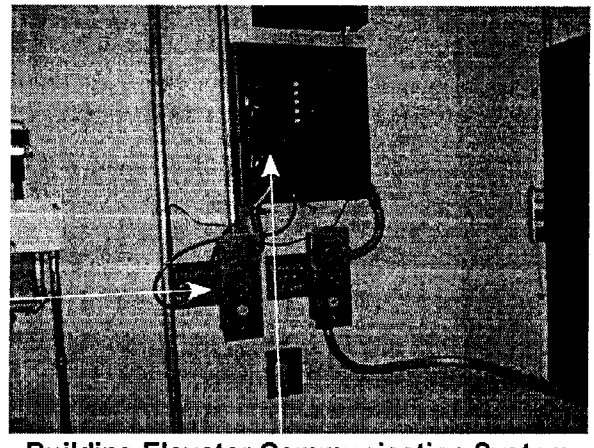
Main Rail
Resting on Buffer Channel in Pit

ONTARIO BUILDING and B44 CODE COMPLIANCE

A review of the TSSA Elevating Devices Registered Design Submission submitted by ThyssenKrupp Elevator for this building, indicates in Box 1.55.50 that Alternate Floor Recall **HAS** been provided. Our site inspection also confirms this information.

The B44-00 Code states that the additional two-position fire recall switch when required shall be located at the fire control panel only (Clause 2.27.3.1.2). Our site inspection confirms that the required two position key switch for each group of elevators **HAS** been provided in the fire control panel room. Also, the required building communication system to call into the elevators has also been installed in this room.

Additional Two-Position Fire Recall Switches



Building Elevator Communication System

QUALITY OF MAINTENANCE

It is difficult at this time to properly assess the quality of preventive maintenance being carried out on the elevators due to the numerous outstanding construction and installation deficiencies which remain outstanding.

ThyssenKrupp has been and is currently still on-site with service crews trying to correct the noise and vibration problems which have been apparent since the installation.

A review of the elevator maintenance log books indicate that the monthly maintenance has not been signed for the months of March and July - 2008 and, several months in 2007 have not been signed off. Also, most of the **annual** inspections and tests are overdue.

Both machine rooms remain very untidy.

CONSTRUCTION and INSTALLATION RELATED DEFICIENCIES

ALL ELEVATORS

- ⇨ Thoroughly vacuum out the front and rear of the controllers, including the bottom of the controllers to remove the construction dust
- ⇨ Neatly tape up and identify the spare wires at the bottom of each controller - tape all bare wires
- ⇨ Thoroughly inspect all counterweights to ensure that weights are securely fastened in place to eliminate all noises from the counterweight
- ⇨ Cut approximately 1" - 2" off the bottom of the car and counterweight rails to allow rails to move as building settles
- ⇨ Thoroughly clean off the car tops and clean down the hoistways - remove all redundant elevator parts and rags and debris from the car tops
- ⇨ Thoroughly inspect all machine and bedplate fastenings to ensure that all machines are installed and isolated exactly as per the ThyssenKrupp installation procedures
- ⇨ Adjust the flight times in BOTH directions to between 9.5 and 10.5 seconds.
- ⇨ Adjust the car door closing times to be between 2.7 - 3 seconds
- ⇨ Re-adjust, re-tune and re-balance all elevators, as required, to provide a quiet and smooth ride in each elevator which would be expected in a prestigious condominium building
- ⇨ Check the tensioning of all hoist ropes with a quality tensioning device and equalize the tensioning of all ropes accordingly.
- ⇨ Thoroughly tidy up the machine rooms and remove all redundant parts and garbage
- ⇨ Install the metal guards on the hoist ropes at the elevator machine when all adjusting has been completed.

Construction and Installation Related Deficiencies - cont'd

ELEVATOR NUMBER 1

⇨ Identify the elevator at the designated level with a RED firefighter's hat as indicated on the Design Submission

ELEVATOR NUMBER 2

⇨ Make the anti-nuisance feature in the elevator operative

ELEVATOR NUMBER 3

⇨ Install the missing cover on the encoder on the end of the hoist motor

⇨ Wipe up the oil from the machine room floor under the machine and correct the oil leak

⇨ Identify the elevator at the designated level with a RED firefighter's hat as indicated on the Design Submission

⇨ Adjust the speed of the elevator in BOTH directions to 490 - 520 fpm

ELEVATOR NUMBER 4

⇨ Adjust the speed of the elevator in BOTH directions to 490 - 520 fpm

⇨ Make the anti-nuisance feature in the elevator operative

⇨ Reduce the clearance between the car door and frame to 3/8" maximum

⇨ Install the cover on the electrical box on the machine room ceiling above the brake

⇨ Eliminate the excessive noise at the counterweight

ELEVATOR PERFORMANCE & RIDE

The speeds of the elevators were recorded on all four elevators. Elevators No. 1 & 2 are operating within acceptable limits and within 2% of their actual contract speed of 500 fpm. However, elevators No. 3 & 4 are running much slower than their contract speed.

The ride in elevators 3 & 4 is extremely noisy with very noticeable vibrations. It appears that the speed of the elevators has been slowed down considerably in order to keep the noise and vibration at a minimum. This ride quality is totally unacceptable. ThyssenKrupp must continue to adjust and test these elevators too eliminate the noise and vibrations and return the elevators to their contract speed at 500 fpm. The original worm gears on these two elevators have been replaced as indicted by the presence of the old worm gears in the machine room. It appears that replacing the worm gears did not make a noticeable improvement in the ride quality.

NOTE: At the time of our inspection a ThyssenKrupp mechanic and Engineer were on-site trying to determine the source of the problems.

The ride in elevators #1 and #2 is far superior to and quieter than elevator #3 and #4. However, there is still a slight vibration noticeable in both cars. ThyssenKrupp should continue to work on these two elevators to improve the ride quality to an acceptable level.

The elevator car door opening and closing times are a little too slow at the present time. However, when all construction is completed and most of the tenants have been moved in the door times can be easily adjusted by the Maintenance Technician to suit the tenant's requirements.

Performance Data Definitions	
CAR SPEED - FPM	The speed of the elevator as indicated in the original contract documents and engraved on the crosshead data plate measured in the UP and DOWN directions and expressed in FPM
FLOOR TO FLOOR TIMES (FLIGHT TIMES) IN SECONDS	The time measured for an elevator to travel one typical floor in the UP or DOWN direction. The time is measured from when the elevator doors start to close at one floor until they are 3/4 of the way open at the next floor.
DOOR OPERATING TIMES IN SECONDS	The time measured from the start of the car door closing or opening until the car doors are fully closed or open.
DOOR CLOSING FORCE IN LBS.	The force necessary to prevent the closing of a horizontally sliding car door or gate from rest. The force shall not be greater than 30 lbs. The force is measured when the door is stopped and held about 1/3 closed.
DWELL TIMES IN SECONDS	The dwell times are measured from the time that the car and hoistway doors stop in the fully open position until they begin to close while responding to a car or hall call.

Elevator Performance & Ride - cont'd

ELEVATOR PERFORMANCE					
FUNCTION	Elevator #1	Elevator #2	Elevator #3	Elevator #4	RECOMMENDED
CAR CONTRACT SPEED: 500 FPM					
Up	512	512	357	408	490 to 520
Down	511	512	357	407	490 to 520
The above speeds for cars 1&2 only are acceptable					
FLIGHT TIMES IN SECONDS					
Up	14.0	12.9	13.6	13.0	9.5 to 10.5
Down	13.9	13.1	13.6	12.9	9.5 to 10.5
The above flight times are high, and should be adjusted to the recommended times					
CAR DOOR OPERATING TIMES IN SECONDS:					
Open Time	2.9	2.9	2.8	3.5	2.5 to 3.0 sec.
Close Time	3.5	3.6	4.0	2.9	2.7 to 3.0 sec.
The Car Door Times should be adjusted to the recommended times after all construction in the building has been completed.					
CAR DOOR CLOSING FORCE IN LBS.:					
Force	16	16	15	17	30 Max.
The Car Door Closing Forces are acceptable					
DWELL TIMES IN SECONDS					
Car Call	3.0	2.9	3.0	2.8	2.0 to 3.0 sec.
Hall Call	5.0	4.6	4.9	4.9	3.0 to 5.0 sec.
The Dwell Times are acceptable					

CONCLUSION

In our opinion, the quality of the elevator components provided in this building are equal to the quality of the elevator products installed in the Phase I Riverside Gate building.

Both Towers feature 500 fpm Overhead Geared Traction elevators with capacities of 2500 lbs.

However, there is a noticeable difference in the ride quality of the elevators in both Towers.

Currently, the ride quality and noise levels of the elevators in Phase II is far inferior than Phase I.

ThyssenKrupp Elevator is currently on-site and has been for sometime trying correct the ride quality and noise problems. We believe many of these deficiencies are related to the initial installation of the elevators.

ThyssenKrupp Elevator should be directed to remain on-site for as long as it takes to arrange all elevators to provide a quiet and smooth ride and operate at their contract speed - 500 fpm.

ThyssenKrupp Elevator must correct, in an acceptable manner, all outstanding deficiencies identified by both Elevator Consulting firms.

We would also recommend that a comprehensive **annual** elevator safety and maintenance inspection be carried out by a qualified Elevator Consultant to ensure that the elevator equipment is being preventively maintained, and in full accordance with TSSA requirements and the B44 Safety Code.

PRIESTMAN NEILSON
& ASSOCIATES LTD.
ELEVATOR AND ESCALATOR CONSULTANTS

June 9th, 2009

3580 Rivergate Way ~ Phase II ~ OCSCC No. 769

PROJECTED CAPITAL COST TABLE

	YEAR▼					
Proposed Work	**0-5**	**5-10**	**10-15**	**15-20**	**20-25**	**25-30**
Contingency for TSSA and MOL directives (elevator machine guarding)	$25,000					
TSSA Directives - Contingency		$20,000		$20,000		$20,000
Car Cab Interior Refurbishing			$85,000			$85,000
Complete modernization of all elevators due to obsolescence of the equipment					$700,000	

The above budget figures are based on **today's** material and labour rates.
GST is extra to all costs.

1173 Klondike Road, Kanata, Ontario ~ K2W 1C8
Phone: (613) 828-7293 E-Mail - JohnTRooney@Aol.com Fax: (613) 828-8081

APPENDIX D: RESERVE FUND STUDY SPREADSHEET

OCSCC 769: RESERVE FUND SPREADSHEET (2nd Revision)

SPREADSHEET ESSENTIALS:

- THE END OF THE FISCAL YEAR IS DECEMBER 31 OF EACH YEAR
- THE RESERVE FUND BALANCE AS AT DECEMBER 31, 2007 WAS: $13,615
- FOR 2008, RESERVE FUND CONTRIBUTIONS WERE: $74,760
- FOR 2009, RESERVE FUND CONTRIBUTIONS ARE: $87,000
- FROM 2010 TO 2014, WE RECOMMEND INCREASING ANNUAL CONTRIBUTIONS BY: $15,000 per year
- AFTER 2014, ONLY ANNUAL INFLATIONARY INCREASES SHOULD BE REQUIRED

SPREADSHEET ASSUMPTIONS:

2.5% IS THE ASSUMED INFLATION RATE FOR EXPENDITURES & CONTRIBUTIONS

3.0% IS THE ASSUMED RATE OF INTEREST EARNINGS FOR RESERVE FUND INVESTMENTS, BASED ON THE AVERAGE BALANCE FOR EACH YEAR

INFLATION AND INTEREST RATES ARE ASSUMED TO BE CONSTANT OVER THE 30-YEAR PERIOD EXAMINED IN THIS SPREADSHEET

AGE OF COMPLEX (start of fiscal year)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
WORK DESCRIPTION / CALENDAR YEAR	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Grounds Lighting																
Exterior Light Fixtures																
Parking Garage Suspended Slab Waterproofing															$225,000	
Asphalt Pavement															$20,000	
Concrete Curbs															$3,000	
Interlocking Paver Stones																
Chain Link Fences																
Wood Fences															$140,000	
Balcony Waterproofing Membrane															$65,000	
Exterior Caulking																
Sliding Glass Patio Doors															$10,000	
Overhead Garage Door																
Inverted Roofing System																
Parking Garage Inverted Roofing System										$115,000					$155,000	
Interior Painting												$18,000				
Carpet																
Ceramic Tile Flooring																
Mosaic Ceramic Tile Flooring					$2,000					$2,000					$2,000	
Amenity Room Appliances and Equipment																
Plumbing and Drainage			$4,000			$4,000			$4,000			$4,000			$13,400	
Fire Protection Systems																
Ventilation Systems															$21,200	
Heating and Cooling Systems																
Fire Alarm System																
Door Entry System															$20,000	
Electric Heating System																
Elevators					$25,000					$20,000					$85,000	
Engineering Fees															$15,000	
Reserve Fund Study Updates	$5,000			$2,500			$5,000			$2,500			$5,000			$2,500
EXPENDITURES, BEFORE INFLATION	$5,000	$0	$4,000	$2,500	$27,000	$4,000	$5,000	$0	$4,000	$139,500	$0	$22,000	$5,000	$0	$774,600	$2,500
EXPENDITURES, AFTER INFLATION	$5,000	$0	$4,202	$2,692	$29,803	$4,526	$5,798	$0	$4,874	$174,216	$0	$28,866	$6,724	$0	$1,094,490	$3,621
ANNUAL CONTRIBUTIONS	$74,760	$87,000	$102,000	$117,000	$132,000	$147,000	$162,000	$166,050	$170,201	$174,456	$178,818	$183,288	$187,870	$192,567	$197,381	$202,316
EARNED INTEREST	$1,477	$3,909	$6,842	$10,281	$13,891	$18,040	$23,138	$28,750	$34,672	$38,249	$42,141	$48,499	$55,086	$62,455	$53,628	$44,626
REMAINING FUND: FUTURE DOLLARS	$84,852	$175,761	$280,401	$404,990	$521,078	$681,592	$860,932	$1,055,732	$1,255,731	$1,294,220	$1,515,179	$1,718,100	$1,954,333	$2,209,355	$1,365,875	$1,609,197
REMAINING FUND: TODAY'S DOLLARS	$82,782	$167,292	$260,380	$366,901	$460,557	$587,735	$724,272	$866,488	$1,005,500	$1,011,043	$1,154,786	$1,277,504	$1,417,713	$1,563,621	$943,090	$1,083,995

OTHER SPREADSHEET INFORMATION:

- ALL COSTS LISTED IN THE ROWS BESIDE WORK DESCRIPTIONS (I.E. ABOVE THE FIRST DOUBLE-LINE) ARE THE ACTUAL COST ESTIMATES OUTLINED IN THE MAIN BODY OF THE REPORT
- INFLATION IS ACCOUNTED FOR ONLY AFTER YEARLY EXPENDITURES ARE TOTALLED
- ALL COSTS ARE ESTIMATED IN 2008 DOLLARS

17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	TOTALS	WORK DESCRIPTION
								$4,000							$4,000	Grounds Lighting
								$4,000							$4,000	Exterior Light Fixtures
													$225,000		$450,000	Parking Garage Suspended Slab Waterproofing
															$20,000	Asphalt Pavement
															$3,000	Concrete Curbs
								$3,000							$3,000	Interlocking Paver Stones
													$8,000		$8,000	Chain Link Fences
								$2,700							$2,700	Wood Fences
													$140,000		$280,000	Balcony Waterproofing Membrane
													$50,000		$115,000	Exterior Caulking
													$380,000		$380,000	Sliding Glass Patio Doors
													$10,000		$20,000	Overhead Garage Door
								$250,000							$250,000	Inverted Roofing System
								$7,000							$7,000	Parking Garage Inverted Roofing System
			$115,000										$270,000		$655,000	Interior Painting
							$18,000								$36,000	Carpet
								$55,000							$55,000	Ceramic Tile Flooring
								$5,200							$5,200	Mosaic Ceramic Tile Flooring
			$2,000					$2,000					$2,000		$12,000	Amenity Room Appliances and Equipment
	$4,000		$7,200	$4,000			$4,000	$73,000		$4,000			$33,600		$159,200	Plumbing and Drainage
													$19,000		$19,000	Fire Protection Systems
								$37,700					$36,000		$94,900	Ventilation Systems
								$298,000					$48,000		$346,000	Heating and Cooling Systems
								$70,000							$70,000	Fire Alarm System
															$20,000	Door Entry System
			$9,600												$9,600	Electric Heating System
			$20,000					$700,000					$105,000		$955,000	Elevators
								$30,000					$35,000		$80,000	Engineering Fees
		$5,000			$2,500			$5,000			$2,500			$5,000	$42,500	Reserve Fund Study Updates
$0	$4,000	$5,000	$153,800	$4,000	$2,500	$0	$22,000	$1,546,600	$0	$4,000	$2,500	$0	$1,361,600	$5,000	$4,106,100	EXPENDITURES, BEFORE INFLATION
$0	$6,086	$7,798	$245,872	$6,554	$4,199	$0	$38,821	$2,797,376	$0	$7,601	$4,870	$0	$2,786,388	$10,488	N/A	EXPENDITURES, AFTER INFLATION
$207,374	$212,558	$217,872	$223,319	$228,902	$234,624	$240,490	$246,502	$252,665	$258,981	$265,456	$272,092	$278,895	$285,867	$293,014	N/A	ANNUAL CONTRIBUTIONS
$52,169	$60,060	$68,233	$73,167	$78,437	$87,721	$97,564	$107,361	$75,041	$42,519	$51,685	$61,255	$71,437	$39,781	$7,216	N/A	EARNED INTEREST
$1,868,739	$2,135,271	$2,413,577	$2,464,190	$2,764,975	$3,083,122	$3,421,176	$3,736,218	$1,266,549	$1,568,049	$1,877,588	$2,206,066	$2,556,397	$95,657	$385,398	$385,398	REMAINING FUND: FUTURE DOLLARS
$1,228,126	$1,369,063	$1,509,760	$1,503,824	$1,646,228	$1,790,877	$1,938,771	$2,065,663	$683,164	$825,162	$963,953	$1,104,969	$1,249,212	$45,604	$179,254	$179,254	REMAINING FUND: TODAY'S DOLLARS