

FULL RESERVE STUDY

Granville Beach Condominium Association



Chicago, Illinois

June 7, 2016



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Reserve Study Update

June 27, 2016

The Reserve Study for Granville Beach Condominium Association
Was submitted onJune 27, 2016

To maintain the most accurate and cost-effective replacement schedule and funding plan for your property elements, this study should be updated on or about**Second Quarter, 2018**
...but no later than.....**Second Quarter, 2019**

As a valued client, we are pleased to offer a future reserve study update with site visit for.....**\$6,800**

For a Reserve Study Update with Site visit as noted above.

This future update fee is based on the same property components that were contained in your last Reserve Advisors' reserve study or update. We are pleased to include property additions for an additional fee.

To initiate your Reserve Study Update, please sign this authorization and fax or mail to the number below. Upon receipt of this authorization we will contact you to schedule your site visit and invoice for the Reserve Study Update Service.

Sign this contract below and fax to **414-272-3663**. Or mail to
Reserve Advisors, Inc.
735 N. Water St., Suite 175
Milwaukee, WI 53202

Delivery options for your Reserve Study Update Report, Please check one of the following:

- 1-Full color printed copy PLUS Electronic Report, FREE
- 2-Full color printed copies PLUS Electronic Report, \$100

For: Reserve Advisors, Inc.

Signature:  _____

Monica Mack
Director of Illinois Client Services
Monica@reserveadvisors.com
Ref. # 040516
(800) 221-9882

For Granville Beach Condominium Association

Name: _____

Title: _____

Date: _____

Phone: _____

Agent or Manager: Bryan McCarley

Management Firm: First Community Management



Long-term thinking. Everyday commitment.



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1. RESERVE STUDY EXECUTIVE SUMMARY

Client: Granville Beach Condominium Association (Granville Beach)

Location: Chicago, Illinois

Reference: 040516

Property Basics: Granville Beach Condominium Association is a condominium style development of 312 units in a 29-story building. The exterior of the building comprises concrete, brick masonry, aluminum frame window systems and flat roofs. The building was built in 1968 and converted to condominiums in 1979.

Reserve Components Identified: 57 Reserve Components.

Inspection Date: June 7, 2016. We conducted the original inspection on January 25, 2005.

Funding Goal: The Funding Goal of this Reserve Study is to maintain reserves above an adequate, not excessive threshold during one or more years of significant expenditures. Our recommended Funding Plan recognizes these threshold funding years in 2021 and 2029 due to façade restoration and replacement of the domestic water piping, respectively.

Cash Flow Method: We use the Cash Flow Method to compute the Reserve Funding Plan. This method offsets future variable Reserve Expenditures with existing and future stable levels of reserve funding. Our application of this method also considers:

- current and future local costs of replacement
- 1.35% annual rate of return on invested reserves
- 2.4% future Inflation Rate for estimating Future Replacement Costs

Sources for Local Costs of Replacement: Our proprietary database, historical costs and published sources, i.e., R.S. Means, Incorporated.

Cash Status of Reserve Fund: \$539,343 as of April 19, 2016.

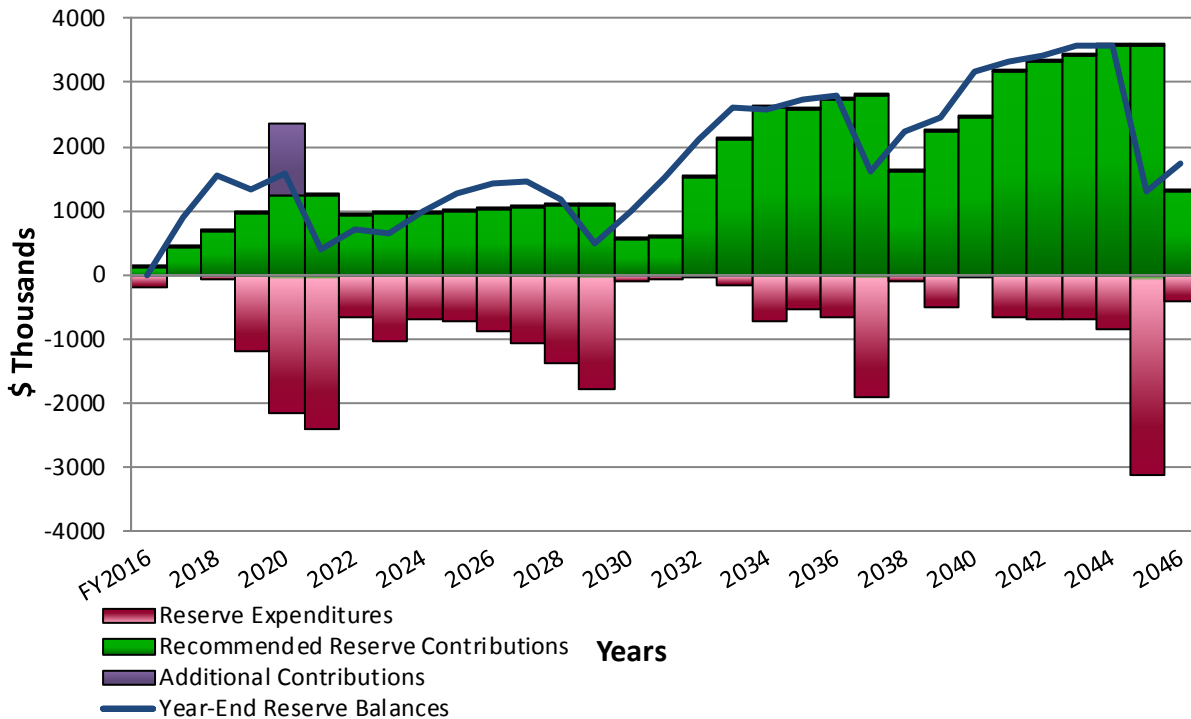
Recommended Reserve Funding: The Association budgeted \$154,928 for Reserve Contributions in 2016. We also include additional annual Reserve Contributions of \$6,000 at the direction of Management for Larson reserve payments. Based on the financial conditions of the Association, we include an additional assessment of \$1,130,000 in 2020 for the boiler system project. We recommend the Association budget annual phased increases in Reserve Contributions of approximately \$270,000 from 2017 through 2020 and a stable annual Reserve Contribution in 2021. By 2022, the Association will have fully funded for façade restoration. Therefore, the Association may anticipate a decrease in the annual Reserve Contribution to \$930,000 and annual inflationary increases through 2029. By 2030, the Association will have fully funded for replacement of the domestic water pipes. Therefore, the Association may anticipate a decrease in the annual Reserve Contribution to \$570,000 and annual inflationary increases thereafter. The initial adjustment in Reserve Contributions of \$269,972 represents about a fourteen percent (13.7%) adjustment in the 2016 total Operating Budget of \$1,970,323. This initial adjustment of \$269,972 is equivalent to an increase of \$72.11 in the monthly contributions per homeowner. The additional assessment of \$1,130,000 in 2020 is equivalent to an average monthly additional assessment of approximately \$302 per homeowner.



Certification: This *Full Reserve Study* exceeds the Community Associations Institute (CAI) and the Association of Professional Reserve Analysts (APRA) standards fulfilling the requirements of a “Level I Full Reserve Study.”

Granville Beach Recommended Reserve Funding Table and Graph

Year	Reserve Contributions (\$)	Reserve Balances (\$)	Year	Reserve Contributions (\$)	Reserve Balances (\$)	Year	Reserve Contributions (\$)	Reserve Balances (\$)
2017	430,900	901,136	2027	1,053,100	1,449,666	2037	678,900	1,609,336
2018	700,900	1,538,191	2028	1,078,200	1,165,930	2038	695,000	2,232,364
2019	970,900	1,334,999	2029	1,103,900	491,327	2039	711,500	2,459,067
2020	2,370,900	1,568,011	2030	576,000	975,414	2040	728,400	3,175,775
2021	1,240,900	411,972	2031	589,700	1,523,351	2041	745,700	3,316,934
2022	936,000	713,571	2032	603,700	2,119,321	2042	763,500	3,428,686
2023	958,300	661,769	2033	618,000	2,622,448	2043	781,700	3,568,258
2024	981,200	980,852	2034	632,700	2,584,498	2044	800,300	3,566,477
2025	1,004,600	1,275,395	2035	647,700	2,744,100	2045	819,400	1,293,041
2026	1,028,600	1,436,341	2036	663,100	2,788,018	2046	838,900	1,739,775



Respectfully submitted on June 27, 2016 by
RESERVE ADVISORS, INC.



Alan M. Ebert, PRA¹, RS², Director of Quality Assurance
Visual Inspection and Report by: Todd M. Walter, PRA, RS



¹PRA (Professional Reserve Analyst) is the professional designation of the Association of Professional Reserve Analysts. Learn more about APRA at <http://www.apra-usa.com>.

²RS (Reserve Specialist) is the reserve provider professional designation of the Community Associations Institute (CAI) representing America's more than 300,000 condominium, cooperative and homeowners associations.

2. RESERVE STUDY REPORT

At the direction of the Board that recognizes the need for proper reserve planning, we have conducted a *Full Reserve Study* of

Granville Beach Condominium Association

Chicago, Illinois

and submit our findings in this report. The effective date of this study is the date of our visual, noninvasive inspection, June 7, 2016. We conducted the original inspection on January 25, 2005.

We present our findings and recommendations in the following report sections and spreadsheets:

- **Identification of Property** - Segregates all property into several areas of responsibility for repair or replacement
- **Reserve Expenditures** - Identifies reserve components and related quantities, useful lives, remaining useful lives and future reserve expenditures during the next 30 years
- **Reserve Funding Plan** - Presents the recommended Reserve Contributions and year-end Reserve Balances for the next 30 years
- **Condition Assessment** - Describes the reserve components, includes photographic documentation of the condition of various property elements, describes our recommendations for repairs or replacement, and includes detailed solutions and procedures for replacements for the benefit of current and future board members
- **Methodology** - Lists the national standards, methods and procedures used, financial information relied upon for the Financial Analysis of the Reserve Study
- **Definitions** - Contains definitions of terms used in the Reserve Study, consistent with national standards
- **Professional Service Conditions** - Describes Assumptions and Professional Service Conditions
- **Credentials and Resources**

IDENTIFICATION OF PROPERTY



Granville Beach Condominium Association is a condominium style development of 312 units in a 29-story building. The exterior of the building comprises concrete, brick masonry, aluminum frame window systems and flat roofs. The building was built in 1968 and converted to condominiums in 1979. We identify 57 major reserve components that are likely to require capital repair or replacement during the next 30 years.

Our investigation includes Reserve Components or property elements as set forth in your Declaration. Our analysis begins by segregating the property elements into several areas of responsibility for repair and replacement. Our process of identification helps assure that future boards and the management team understand whether reserves, the operating budget or Homeowners fund certain replacements and assists in preparation of the annual budget. We

derive these segregated classes of property from our review of the information provided by the Association and through conversations with Management. These classes of property include:

- Reserve Components
- Long-Lived Property Elements
- Operating Budget Funded Repairs and Replacements
- Property Maintained by Homeowners
- Property Maintained by Others

We advise the Board conduct an annual review of these classes of property to confirm its policy concerning the manner of funding, i.e., from reserves or the operating budget.

The Reserve Study identifies Reserve Components as set forth in your Declaration or which were identified as part of your request for proposed services. Reserve Components are defined by CAI as property elements with:

- Granville Beach responsibility
- Limited useful life expectancies
- Predictable remaining useful life expectancies
- Replacement cost above a minimum threshold

Long-Lived Property Elements do not have predictable Remaining Useful Lives. The operating budget should fund infrequent repairs. Funding untimely or unexpected replacements from reserves will necessitate increases to Reserve Contributions. Periodic updates of this Reserve Study will help determine the merits of adjusting the Reserve Funding Plan. We identify the following Long-Lived Property Elements as excluded from reserve funding at this time.

- Davits (Indeterminate Remaining Useful Life)
- Electrical Systems, Common, Wires and Bus Bar
- Foundation
- Pipes, Interior Building, Fire Standpipes (Indeterminate Remaining Useful Life)
- Pipes, Subsurface Utilities
- Structural Frame

The operating budget provides money for the repair and replacement of certain Reserve

Components. Operating Budget Funded Repairs and Replacements relate to:

- General Maintenance to the Common Elements
- Expenditures less than \$15,000 (These relatively minor expenditures have a limited effect on the recommended Reserve Contributions.)
- Basement
- Ceiling Tile System, 28th Floor (The Association will replace the tile system in 2016 as part of the life safety ordinance requirements.)
- Chemical Treatment Systems
- Concrete, Miscellaneous On-grade
- Doors, Interior and Miscellaneous Exterior
- Engineer's Apartment
- Examinations, Periodic Ground Level Inspections of the Exterior Walls as Required by the Chicago Exterior Facade Ordinance
- Exhaust Systems (Except Garage) (We assume replacement as needed in lieu of in aggregate.)
- Expansion Tanks
- Fire Hoses and Extinguishers
- Flagpole
- Garage, Drain Pipes
- Garage, Paint Finishes
- Garage, Vehicular Doors (Ages Vary) (We assume replacement as needed in lieu of in aggregate.)
- Gates, North Perimeter
- Hallway, 2nd Floor
- Intercom System at Units (Not Used)
- Landscape
- Light Fixtures, Building Exterior
- Light Fixtures, Stairwells
- Loading Dock
- Loan Payments
- Make-up Water System
- Mirrors
- Motors
- Office
- Paint Finishes, Touch Up
- Pumps Less Than Five-HP (horsepower)
- Service Areas
- Signage
- Staff Areas
- Storage Areas
- Sun Deck, Furnishings

- Sun Deck, Light Fixtures
- Sun Deck, Wood, Stain Applications
- Trash Rooms, Finishes and Light Fixtures
- Valves, Small Diameter (We assume replacement as needed in lieu of an aggregate replacement of all the small diameter valves as a single event.)
- Other Repairs normally funded through the Operating Budget

Certain items have been designated as the responsibility of the homeowners to repair or replace at their cost. Property Maintained by Homeowners, including items billed back to Homeowners, relates to unit:

- Doors, Hallways
- Electrical Systems (Including Circuit Protection Panels)
- Heating, Ventilating and Air Conditioning (HVAC) Units (Including Air Conditioning Units, Fin Tube Radiators and Regulating Valves) (Including Air Conditioning Unit Sleeves)
- Interiors
- Pipes, Interior Building, Water and Sewer (Within Units)
- Window Systems (The building includes approximately 58,000 square feet of unit window systems. The windows comprise single pane glass with aluminum frames and are original. The window systems are in poor condition with significant seal failure evident. The windows have a useful life of up to 50 years. We recommend the Association implement a project to replace the windows in the near term with the costs billed back to the owners.)



Seal failure at unit window



Lack of a gasket at hopper window

Certain items have been designated as the responsibility of others to repair or replace.

Property Maintained by Others relates to:

- Laundry Room and Equipment (Vendor Contract)
- Seawall (Army Corp of Engineers)
- Sidewalks, Public, North and West Perimeters (City of Chicago) (We assume that the Association will fund any shared expenses as needed through the operating budget.)



3. RESERVE EXPENDITURES and FUNDING PLAN

The tables following this introduction present:

Reserve Expenditures

- Line item numbers
- Total quantities
- Quantities replaced per phase (in a single year)
- Reserve component inventory
- Estimated first year of event (i.e., replacement, application, etc.)
- Life analysis showing
 - useful life
 - remaining useful life
- Unit cost of replacement
- 2016 local cost of replacement
- Total future costs of replacement anticipated during the next 30 years
- Schedule of estimated future costs for each reserve component including inflation

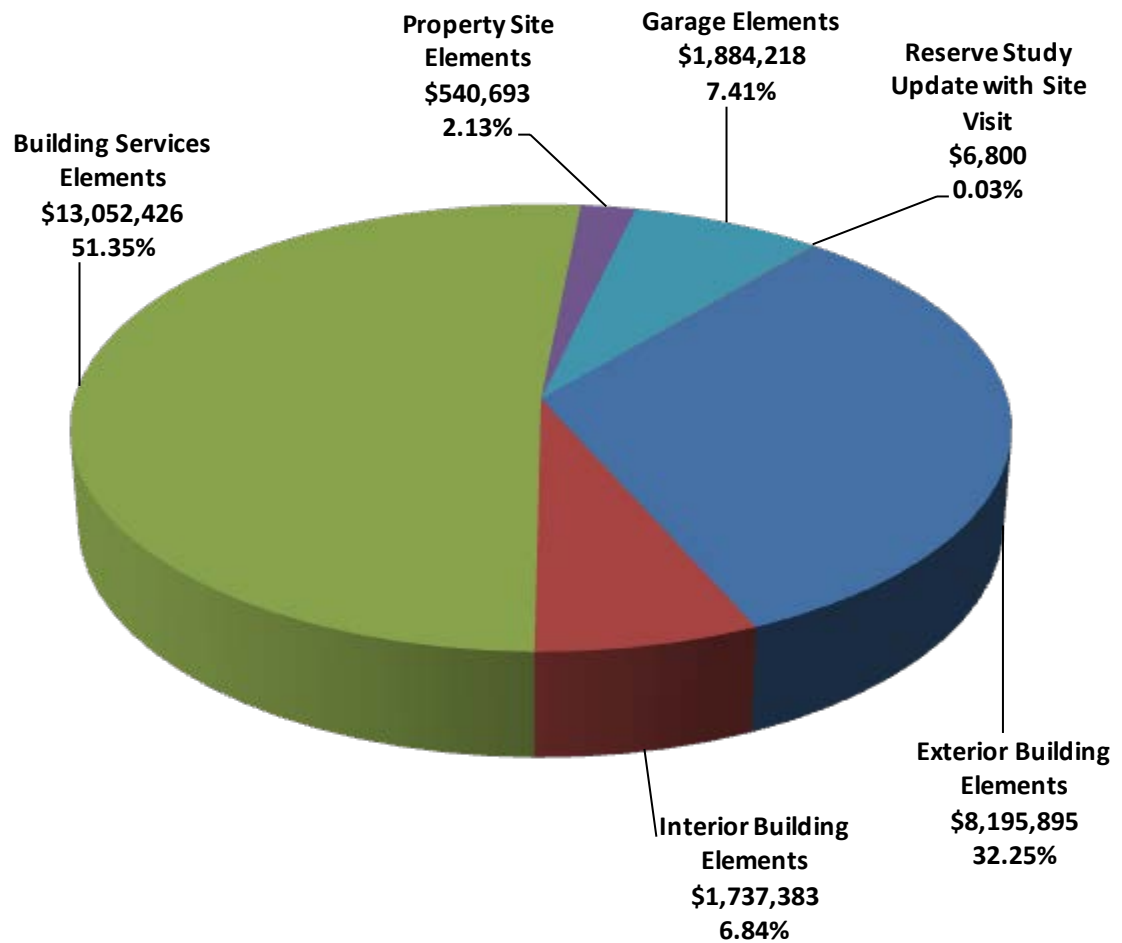
Reserve Funding Plan

- Reserves at the beginning of each year
- Total recommended reserve contributions
- Estimated interest earned from invested reserves
- Anticipated expenditures by year
- Anticipated reserves at year end

Financial statements prepared by your association, by you or others might rely in part on information contained in this section. For your convenience, we have provided an electronic data file containing the tables of *Reserve Expenditures* and *Reserve Funding Plan*.

The following chart illustrates the relative importance of the categories noted in *Reserve Expenditures* and relative funding during the next 30 years.

Granville Beach
Future Expenditures Relative Cost Illustration



RESERVE EXPENDITURES

Granville Beach Condominium Association Chicago, Illinois

Line Item	Total Quantity	Per Phase Quantity	Units	Reserve Component Inventory	Estimated 1st Year of Event	Life Analysis, Years		Costs, \$				16 2032	17 2033	18 2034	19 2035	20 2036	21 2037	22 2038	23 2039	24 2040	25 2041	26 2042	27 2043	28 2044	29 2045	30 2046		
						Useful	Remaining	Unit (2016)	Per Phase (2016)	Total (2016)	30-Year Total (Inflated)																	
<u>Exterior Building Elements</u>																												
1.130	1	1	Allowance	Canopy, Lobby Entrance (Redesign)	2023	to 30	7	30,000.00	30,000	30,000	35,418																	
1.273	330	330	Lienar Feet	Railings, 29th Floor Roofs	2020	to 35	4	120.00	39,600	39,600	43,541																	
1.530	79	79	Squares	Roofs, Mechanical Penthouse and 29th Floor West, Thermoplastic	2027	15 to 20	11	3,280.00	259,120	259,120	851,823															515,466		
1.531	27	27	Squares	Roof, 29th Floor East, Membrane and Sun Deck Wood	2028	15 to 20	12	7,500.00	202,500	202,500	681,669																412,500	
1.540	64,000	32,000	Linear Feet	Sealants, Windows (Incl. AC Units, Concrete/Brick), Phased	2021	to 20	5 to 13	11.00	352,000	704,000	2,154,884						579,218										700,231	
1.590	7,000	7,000	Square Feet	Soffits, Paint Finishes and Repairs	2020	to 10	4	4.00	28,000	28,000	119,284								49,472									
1.660	47,000	47,000	Square Feet	Walls, Concrete, Inspections and Restorations	2021	to 8	5	7.00	329,000	329,000	2,014,081						541,371										654,477	
1.665	47,000	47,000	Square Feet	Walls, Concrete, Coating Applications	2021	to 20	5	4.00	188,000	188,000	521,024						309,355											
1.820	34,000	34,000	Square Feet	Walls, Masonry, Tower, Inspections and Repairs	2021	to 8	5	5.20	176,800	176,800	1,082,339						290,925										351,707	
1.821	7,000	7,000	Square Feet	Walls, Masonry, Base Structure, Inspections and Repairs	2018	to 8	2	10.00	70,000	70,000	399,098			107,275							129,687							
1.980	4,000	4,000	Square Feet	Windows, Common (Lobby, 2nd Floor, 29th Floor)	2021	to 50	5	65.00	260,000	260,000	292,734																	
<u>Interior Building Elements</u>																												
2.100	4	4	Each	Elevator Cab Finishes	2034	to 20	18	13,000.00	52,000	52,000	79,690			79,690														
2.160	1	1	Allowance	Exercise Equipment, Phased (Incl. Room Finishes)	2019	5 to 15	3	29,000.00	29,000	44,000	211,166					47,720											55,017	
2.200	2,100	2,100	Square Yards	Floor Coverings, Carpet, Hallways	2023	8 to 12	7	59.00	123,900	123,900	340,708						194,433											
2.560	286	286	Each	Light Fixtures, Hallways	2035	to 25	19	200.00	57,200	57,200	89,763					89,763												
2.600	1	1	Allowance	Lobby, Renovation	2021	to 25	5	80,000.00	80,000	80,000	245,486																155,414	
2.601	3	3	Each	Lobby, Automatic Doors	2021	to 15	5	10,000.00	30,000	30,000	81,985						48,208											
2.700	312	312	Units	Mailboxes	2021	to 35	5	150.00	46,800	46,800	52,692																	
2.800	79,000	79,000	Square Feet	Paint Finishes, Hallways	2023	8 to 12	7	1.30	102,700	102,700	282,412					161,165												
2.820	2	2	Each	Paint Finishes, Stairwells	2023	15 to 20	7	25,000.00	50,000	50,000	153,887																94,857	
2.840	1	1	Allowance	Party Room, Renovations (Incl. 29th Hall, Rest Rooms, Kitchen)	2021	to 20	5	70,000.00	70,000	70,000	199,594								120,781									
<u>Building Services Elements</u>																												
3.020	2	2	Each	Air Handling Units, Corridors, Coils and Controls	2045	to 30	29	65,000.00	130,000	130,000	258,608																258,608	
3.021	1	1	Each	Air Handling Unit, 29th Floor, Coils and Controls	2045	to 30	29	40,000.00	40,000	40,000	79,572																79,572	
3.022	1	1	Each	Air Handling Unit, Lobby	2020	to 30	4	50,000.00	50,000	50,000	54,976																	
3.023	2	2	Systems	Air Handling and Condensing Units, Elevator Room	2031	to 20	15	6,000.00	12,000	12,000	17,127																	
3.024	1	1	Allowance	Air Handling and Condensing Units, Party and Exercise Rooms	2030	to 20	14	45,000.00	45,000	45,000	62,721																	
3.105	1	1	Allowance	Boiler System Project	2020	to 50	4	1,031,700	1,031,700	1,031,700	1,134,366																	
3.170	1	1	Allowance	Building Automation System (Controls)	2034	to 15	18	55,000.00	55,000	55,000	84,287			84,287														
3.300	1	1	Allowance	Electrical System, Main Panels	2036	to 70+	20	300,000.00	300,000	300,000	482,081					482,081												
3.360	1	1	Allowance	Elevators, Traction, Controls and Equipment, Remaining Cost	2016	to 35	0	89,000.00	89,000	89,000	89,000																	
3.465	2	2	Each	Heat Exchangers, Domestic Water	2035	to 25	19	25,000.00	50,000	50,000	78,464					78,464												
3.554	1	1	Allowance	Life Safety System, Remaining Ordinance Compliance	2016	n/a	0	110,000.00	110,000	110,000	110,000																	
3.555	1	1	Each	Life Safety System, Control Panel	2028	to 15	12	22,000.00	22,000	22,000	70,002																40,759	

RESERVE EXPENDITURES

Granville Beach
Condominium Association
Chicago, Illinois

Explanatory Notes:

- 1) **2.4%** is the estimated future Inflation Rate for estimating Future Replacement Costs.
- 2) FY2016 is Fiscal Year beginning January 1, 2016 and ending December 31, 2016.

Line Item	Total Quantity	Per Phase Quantity	Units	Reserve Component Inventory	Estimated 1st Year of Event	Life Analysis, Years		Costs, \$				RUL = 0 FY2016	1 2017	2 2018	3 2019	4 2020	5 2021	6 2022	7 2023	8 2024	9 2025	10 2026	11 2027	12 2028	13 2029	14 2030	15 2031		
						Useful	Remaining	Unit (2016)	Per Phase (2016)	Total (2016)	30-Year Total (Inflated)																		
3.560	1	1	Allowance	Life Safety System, Emergency Devices	2037	to 25	21	72,000.00	72,000	72,000	118,476																		
3.580	190	190	Each	Light Fixtures, Exit and Emergency	2021	to 25	5	270.00	51,300	51,300	157,418						57,759												
3.600	406	81	Each	Pipes, Riser Sections, Building Heating, Phased	2041	to 80+	25 to 29	3,500.00	284,200	1,421,000	2,697,349																		
3.605	2,320	232	Each	Pipes, Riser Sections, Domestic Water, Waste and Vent, Phased	2019	to 70+	3 to 12	2,400.00	556,800	5,568,000	6,667,393				597,859	612,208	626,901	641,947	657,353	673,130	689,285	705,828	722,768	740,114					
3.700	2	2	Each	Pumps, Building Heating (Incl. Controls, VFDs)	2041	to 25	25	18,000.00	36,000	36,000	65,133																		
3.701	3	3	Each	Pumps, Domestic Cold Water (Incl. Controls, VFDs)	2036	to 25	20	21,000.00	63,000	63,000	101,237																		
3.702	1	1	Each	Pump, Fire Suppression (Incl. Jockey Pumps, Controls)	2028	to 60	12	90,000.00	90,000	90,000	119,631																119,631		
3.703	2	2	Each	Pumps, Gas Booster (Incl. Controls)	2020	to 25	4	12,500.00	25,000	25,000	72,719					27,488													
3.704	4	4	Each	Pumps, Sump/Sewage Ejection (Incl. Controls)	2020	to 20	4	9,000.00	36,000	36,000	100,242					39,582													
3.820	2	1	Allowance	Security System (Camera and Card Reader Systems), Phased	2016	to 15	4 to 10	22,000.00	22,000	44,000	170,514	6,475				24,189											27,888		
3.880	28	28	Floors	Trash Chute and Doors	2033	to 65	17	3,500.00	98,000	98,000	146,665																		
3.900	1	1	Each	Trash Compactor	2019	to 25	3	13,000.00	13,000	13,000	37,479				13,959														
3.920	14	14	Each	Valves, Large Diameter (Main Water and Fire Pump)	2020	to 50+	4	5,000.00	70,000	70,000	76,966					76,966													
Property Site Elements																													
4.303	1	1	Allowance	Fishing Pier, Renovation (Concrete and Fence)	2026	to 40	10	50,000.00	50,000	50,000	63,383																63,383		
4.959	3,350	3,350	Square Feet	Vaulted Structure, West Perimeter, Interim Coating and Repairs	2019	to 10	3	12.00	40,200	40,200	112,527				43,164														
4.960	3,350	3,350	Square Feet	Vaulted Structure, West Perimeter, Membrane Replacement	2029	to 30	13	80.00	268,000	268,000	364,783																364,783		
Garage Elements																													
7.300	33,000	33,000	Square Feet	Concrete, Elevated Floors, Inspections and Capital Repairs	2019	10 to 15	3	5.00	165,000	165,000	430,029				177,167														
7.360	22,000	1,100	Square Feet	Concrete, On-grade, Partial	2019	to 90	3 to 30+	19.00	20,900	418,000	54,470				22,441														
7.460	1	1	Allowance	Exhaust System (Fan, Louvers and Proposed CO System)	2020	to 30	4	53,000.00	53,000	53,000	58,274					58,274													
7.500	37,000	37,000	Square Feet	Fire Suppression System	2028	to 60	12	4.50	166,500	166,500	221,316																221,316		
7.600	70	70	Each	Light Fixtures	2036	to 30	20	220.00	15,400	15,400	24,747																		
7.799	18,000	18,000	Square Feet	Traffic Coating, Elevated Floors, 2nd Floor (Incl. Exp. Joint)	2019	to 10	3	10.50	189,000	189,000	786,298				202,937												257,253		
7.800	15,000	15,000	Square Feet	Traffic Coating, 1st Floor	2019	10 to 15	3	6.50	97,500	97,500	254,108				104,690														
7.900	1	1	Allowance	Unit Heaters	2020	to 30	4	50,000.00	50,000	50,000	54,976					54,976													
		1	Allowance	Reserve Study Update with Site Visit	2018	2	2	6,800.00	6,800	6,800	6,800				6,800														
Anticipated Expenditures, By Year																													
										\$25,417,415	205,475	0	80,200	1,193,356	2,157,352	2,410,214	641,947	1,019,323	673,130	725,185	885,835	1,059,125	1,379,473	1,789,614	101,747	58,517			

RESERVE EXPENDITURES

**Granville Beach
Condominium Association
Chicago, Illinois**

Line Item	Total Quantity	Per Phase Quantity	Units	Reserve Component Inventory	Estimated 1st Year of Event	Life Analysis, Years		Costs, \$				16 2032	17 2033	18 2034	19 2035	20 2036	21 2037	22 2038	23 2039	24 2040	25 2041	26 2042	27 2043	28 2044	29 2045	30 2046	
						Useful	Remaining	Unit (2016)	Per Phase (2016)	Total (2016)	30-Year Total (Inflated)																
3.560	1	1	Allowance	Life Safety System, Emergency Devices	2037	to 25	21	72,000.00	72,000	72,000	118,476						118,476										
3.580	190	190	Each	Light Fixtures, Exit and Emergency	2021	to 25	5	270.00	51,300	51,300	157,418													99,659			
3.600	406	81	Each	Pipes, Riser Sections, Building Heating, Phased	2041	to 80+	25 to 29	3,500.00	284,200	1,421,000	2,697,349									514,189	526,530	539,167	552,106	565,357			
3.605	2,320	232	Each	Pipes, Riser Sections, Domestic Water, Waste and Vent, Phased	2019	to 70+	3 to 12	2,400.00	556,800	5,568,000	6,667,393																
3.700	2	2	Each	Pumps, Building Heating (Incl. Controls, VFDs)	2041	to 25	25	18,000.00	36,000	36,000	65,133										65,133						
3.701	3	3	Each	Pumps, Domestic Cold Water (Incl. Controls, VFDs)	2036	to 25	20	21,000.00	63,000	63,000	101,237					101,237											
3.702	1	1	Each	Pump, Fire Suppression (Incl. Jockey Pumps, Controls)	2028	to 60	12	90,000.00	90,000	90,000	119,631																
3.703	2	2	Each	Pumps, Gas Booster (Incl. Controls)	2020	to 25	4	12,500.00	25,000	25,000	72,719										45,231						
3.704	4	4	Each	Pumps, Sump/Sewage Ejection (Incl. Controls)	2020	to 20	4	9,000.00	36,000	36,000	100,242							60,660									
3.820	2	1	Allowance	Security System (Camera and Card Reader Systems), Phased	2016	to 15	4 to 10	22,000.00	22,000	44,000	170,514	32,153						37,070					42,739				
3.880	28	28	Floors	Trash Chute and Doors	2033	to 65	17	3,500.00	98,000	98,000	146,665		146,665														
3.900	1	1	Each	Trash Compactor	2019	to 25	3	13,000.00	13,000	13,000	37,479									23,520							
3.920	14	14	Each	Valves, Large Diameter (Main Water and Fire Pump)	2020	to 50+	4	5,000.00	70,000	70,000	76,966																
Property Site Elements																											
4.303	1	1	Allowance	Fishing Pier, Renovation (Concrete and Fence)	2026	to 40	10	50,000.00	50,000	50,000	63,383																
4.959	3,350	3,350	Square Feet	Vaulted Structure, West Perimeter, Interim Coating and Repairs	2019	to 10	3	12.00	40,200	40,200	112,527								69,363								
4.960	3,350	3,350	Square Feet	Vaulted Structure, West Perimeter, Membrane Replacement	2029	to 30	13	80.00	268,000	268,000	364,783																
Garage Elements																											
7.300	33,000	33,000	Square Feet	Concrete, Elevated Floors, Inspections and Capital Repairs	2019	10 to 15	3	5.00	165,000	165,000	430,029									252,862							
7.360	22,000	1,100	Square Feet	Concrete, On-grade, Partial	2019	to 90	3 to 30+	19.00	20,900	418,000	54,470									32,029							
7.460	1	1	Allowance	Exhaust System (Fan, Louvers and Proposed CO System)	2020	to 30	4	53,000.00	53,000	53,000	58,274																
7.500	37,000	37,000	Square Feet	Fire Suppression System	2028	to 60	12	4.50	166,500	166,500	221,316																
7.600	70	70	Each	Light Fixtures	2036	to 30	20	220.00	15,400	15,400	24,747					24,747											
7.799	18,000	18,000	Square Feet	Traffic Coating, Elevated Floors, 2nd Floor (Incl. Exp. Joint)	2019	to 10	3	10.50	189,000	189,000	786,298								326,108								
7.800	15,000	15,000	Square Feet	Traffic Coating, 1st Floor	2019	10 to 15	3	6.50	97,500	97,500	254,108					149,418											
7.900	1	1	Allowance	Unit Heaters	2020	to 30	4	50,000.00	50,000	50,000	54,976																
		1	Allowance	Reserve Study Update with Site Visit	2018	2	2	6,800.00	6,800	6,800	6,800																
Anticipated Expenditures, By Year											\$25,417,415	32,153	146,665	705,561	523,825	656,273	1,887,065	97,730	516,252	49,472	648,073	696,976	689,041	849,918	3,125,418	412,500	

RESERVE FUNDING PLAN

CASH FLOW ANALYSIS
 Granville Beach
 Condominium Association
 Chicago, Illinois

Individual Reserve Budgets & Cash Flows for the Next 30 Years

	FY2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Reserves at Beginning of Year (Note 1)	539,343	461,103	901,136	1,538,191	1,334,999	1,568,011	411,972	713,571	661,769	980,852	1,275,395	1,436,341	1,449,666	1,165,930	491,327	975,414
Plus Recommended Reserve Contributions	116,196	424,900	694,900	964,900	1,234,900	1,234,900	930,000	952,300	975,200	998,600	1,022,600	1,047,100	1,072,200	1,097,900	570,000	583,700
Plus Boiler System Project					1,130,000											
Plus Transfer Larson to Reserves	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000
Total Recommended Reserve Contributions (Note 2)	122,196	430,900	700,900	970,900	2,370,900	1,240,900	936,000	958,300	981,200	1,004,600	1,028,600	1,053,100	1,078,200	1,103,900	576,000	589,700
Plus Estimated Interest Earned, During Year (Note 3)	5,039	9,133	16,355	19,264	19,464	13,275	7,546	9,221	11,013	15,128	18,181	19,350	17,537	11,111	9,834	16,754
Less Anticipated Expenditures, By Year	(205,475)	0	(80,200)	(1,193,356)	(2,157,352)	(2,410,214)	(641,947)	(1,019,323)	(673,130)	(725,185)	(885,835)	(1,059,125)	(1,379,473)	(1,789,614)	(101,747)	(58,517)
Anticipated Reserves at Year End	<u>\$461,103</u>	<u>\$901,136</u>	<u>\$1,538,191</u>	<u>\$1,334,999</u>	<u>\$1,568,011</u>	<u>\$411,972</u>	<u>\$713,571</u>	<u>\$661,769</u>	<u>\$980,852</u>	<u>\$1,275,395</u>	<u>\$1,436,341</u>	<u>\$1,449,666</u>	<u>\$1,165,930</u>	<u>\$491,327</u>	<u>\$975,414</u>	<u>\$1,523,351</u>
						(NOTE 5)								(NOTE 5)		
Predicted Reserves based on 2016 funding level of: \$154,928	461,103	623,302	706,949	(328,945)	(2,349,326)											

(continued)

Individual Reserve Budgets & Cash Flows for the Next 30 Years, Continued

	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046
Reserves at Beginning of Year	1,523,351	2,119,321	2,622,448	2,584,498	2,744,100	2,788,018	1,609,336	2,232,364	2,459,067	3,175,775	3,316,934	3,428,686	3,568,258	3,566,477	1,293,041
Plus Recommended Reserve Contributions	597,700	612,000	626,700	641,700	657,100	672,900	689,000	705,500	722,400	739,700	757,500	775,700	794,300	813,400	832,900
Plus Transfer Larson to Reserves	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000
Total Recommended Reserve Contributions	603,700	618,000	632,700	647,700	663,100	678,900	695,000	711,500	728,400	745,700	763,500	781,700	800,300	819,400	838,900
Plus Estimated Interest Earned, During Year	24,423	31,792	34,911	35,727	37,091	29,483	25,758	31,455	37,780	43,532	45,228	46,913	47,837	32,582	20,334
Less Anticipated Expenditures, By Year	(32,153)	(146,665)	(705,561)	(523,825)	(656,273)	(1,887,065)	(97,730)	(516,252)	(49,472)	(648,073)	(696,976)	(689,041)	(849,918)	(3,125,418)	(412,500)
Anticipated Reserves at Year End	<u>\$2,119,321</u>	<u>\$2,622,448</u>	<u>\$2,584,498</u>	<u>\$2,744,100</u>	<u>\$2,788,018</u>	<u>\$1,609,336</u>	<u>\$2,232,364</u>	<u>\$2,459,067</u>	<u>\$3,175,775</u>	<u>\$3,316,934</u>	<u>\$3,428,686</u>	<u>\$3,568,258</u>	<u>\$3,566,477</u>	<u>\$1,293,041</u>	<u>\$1,739,775</u>
															(NOTE 4)

Explanatory Notes:

- 1) Year 2016 starting reserves are as of April 19, 2016; FY2016 starts January 1, 2016 and ends December 31, 2016.
- 2) Reserve Contributions for 2016 are the remaining budgeted 9 months; 2017 is the first year of recommended contributions.
- 3) 1.35% is the estimated annual rate of return on invested reserves; 2016 is a partial year of interest earned.
- 4) Accumulated year 2046 ending reserves consider the age, size, overall condition and complexity of the property.
- 5) Threshold Funding Years (reserve balance at critical point).

4. CONDITION ASSESSMENT

The Condition Assessment of this *Full Reserve Study* includes *Enhanced Solutions and Procedures* for select significant components. These narratives describe the Reserve Components, document specific problems and conditions, and may include detailed solutions and procedures for necessary capital repairs and replacements for the benefit of current and future board members. We advise the Board use this information to help define the scope and procedures for repair or replacement when soliciting bids or proposals from contractors. *However, the Report in whole or part is not and should not be used as a design specification or design engineering service.*

Exterior Building Elements



South and west elevations



North and west elevations



East and south elevations

Canopy, Lobby Entrance - The building includes a canopy at the lobby entrance. The canopy comprises a metal structure with a flat roof, finished soffit, metal fascia and light fixtures.



Lobby canopy

The Association replaced the roof in 2012. The canopy system has a useful life of up to 30 years. The desire to update the appearance of the front entrance area often warrants a redesign of the entrance canopy. We include an expenditure for its replacement by 2023. We recommend the Association conduct interim repairs and paint applications through the operating budget. We note this information on Line Item 1.130 of ***Reserve Expenditures***.

Railings, 29th Floor Roofs – The 29th floor east and west roofs include approximately 330 linear feet of prefinished aluminum railings. The railings were replaced in 2010. The Building Engineer informs us of excessive vibration of the railings resulting in damaged pickets and loose fasteners.



Railing damage



Railing at mount

The railings have a useful life of up to 35 years. However, based on the conditions we include an expenditure for their replacement by 2020. We recommend the Association ensure proper design of the railing system to account for wind loads and the location. We also recommend the Association consider installation of prefinished steel railings. We note this information on Line Item 1.273 of *Reserve Expenditures*.

Roofs, Mechanical Penthouse and 29th Floor West, Thermoplastic - The mechanical penthouse and 29th floor west roofs at Granville Beach consist of 79 *squares*¹ of thermoplastic roofing. The roofs were replaced in 2009 are in good overall condition. The Building Engineer does not report a history of leaks. Our visual inspection notes membrane bulge, perimeter sealant deterioration and areas that lack drainage.

¹ We quantify the roof area in *squares*, where one square is equal to 100 square feet of surface area.



Roof system perimeter termination



Evidence of lack of drainage at mechanical penthouse roof



Roof system perimeter termination

Thermoplastic roofs include the following:

- Polyvinyl chloride (PVC or simply vinyl)
- PVC alloys or compounded thermoplastics
- Thermoplastic olefin (TPO)
- Chlorinated polyethylene (CPE)

The useful life of thermoplastic roofs in Chicago is from 15- to 20-years. We include the following solutions and procedures pertaining to replacement of thermoplastic roofs for the benefit of present and future board members.

The following characteristics define most thermoplastic roofs:

- Attachment to the roof deck is either fully adhered, mechanical or ballasted
- Membranes are commonly white and reinforced with polyester
- Seams are sealed with heat or chemical welding
- Sheet widths range from 6- to 12-feet wide
- Sheets are typically 40- to 100-mils thick
- Single ply (one layer)

The white material of thermoplastic roofs provides high solar reflectance and high thermal emittance. Therefore, thermoplastic roofs are considered "cool roofs." These membranes can be repeatedly softened by heating to conduct repairs. Thermoplastic roof systems are highly resistant to tears, impacts and punctures.

Reroofing is always more labor intensive than an original installation. Removal and disposal are a problem in multistory buildings because of problems conveying the materials off and onto the roof. To maximize the remaining useful life of the roof, the Association should conduct periodic repairs as necessary and fund these expenses through the operating budget. The Association should retain a maintenance company for inspections of the roofs semiannually and fund these inspections through the operating budget.

Over time, exposure to ultraviolet light, heat and weather degrade the membrane. This degradation results in membrane damage from thermal expansion and contraction, adverse weather and pedestrian traffic. The aging process makes the membrane less pliable and more difficult to maintain. Ponding water on the roof can increase the effects of ultraviolet light on the membrane and contaminants in ponded water can cause the membrane to deteriorate prematurely. Thermoplastic roofs (especially TPO) are relatively new and their long term performance is not well defined.

Contractors can install a new thermoplastic roof in one of two ways: *tear-off* or an *overlay*. An *overlay* is the application of a new roof membrane over an existing roof. This

method, although initially more economical, often covers up problems with the deck, flashing and saturated insulation. The *tear-off* method of replacement includes removal of the existing roofing, flashings and insulation, and installation of a new roofing system. The contractor should follow the manufacturer's directions and specifications upon installation of the roof. The contractor should remove the original insulation if saturated or compacted and apply a new layer of insulation from ½ inch to one inch thick per the manufacturer's instructions. The insulation should fit loosely with gaps no greater than ¼ inch. Gaps will cause failure of the membrane later. Mechanical fastening of the insulation is the best manner of installation.

The time or need to replace the roofs becomes apparent with multiple or recurring leaks. The Association should determine whether the origin of the leaks is from the membrane or flashings. Repairs of the flashings may be more cost-effective than replacement of the entire roof. However, because of the difficulty in finding several or many breaks in a roof, replacement eventually becomes the more economical option rather than repair. We recommend Granville Beach prepare for a complete tear-off at the time of replacement by 2027 and again by 2045. We depict this information on Line Item 1.530 of *Reserve Expenditures*.

Roof, 29th Floor East, Membrane and Sun Deck – The 29th floor east roof area comprises approximately 27 squares of flat membrane roofing with a wood sun deck. The roof system and sun deck were replaced in 2010. The sun deck exhibits areas of finish deterioration.



Sun deck wood finish deterioration



Sun deck overview

The sun deck wood and underlying roof system has a useful life of 15- to 20-years. We assume timely stain applications to the wood decking through the operating budget. We include an expenditure for replacement of the sun deck wood and roof system by 2028 and again by 2046. We note this information on Line Item 1.531 of *Reserve Expenditures*.

Sealants, Windows - The perimeters of the window frames, perimeter of the air conditioning units and the brick/concrete interfaces use approximately 64,000 linear feet of exterior sealants or *caulk*.² Sealants are flexible, allow for differential movement between dissimilar materials and prevent water infiltration into the building. The sealants vary in age and condition. The Association completed as needed replacement of the sealants in 2011. We note areas of deterioration. The Building Engineer informs us of a limited recent history of water infiltration from the façade.

² The terms sealant and caulk are used interchangeably throughout this text and throughout the industry.



Varied sealant conditions at metal/concrete interface



Sealant at brick/concrete interface

The periodic inspection and replacement of deteriorated sealants is essential to maximize the useful life of the window and door systems and prevent water infiltration. The Association should anticipate a useful life of up to 20 years for exterior caulk used for this application. However, the rate of deterioration of the sealants is not uniform due to the different exposures to sunlight and weather. The Association should anticipate gradual dispersed deterioration as the sealants age. We discuss solutions and procedures related to replacement of sealants in the following narrative.

Sealant failure allows for the infiltration of water into the building. There are three types of joint sealant failure. Adhesion failure occurs when sealant pulls away from the sides of the joint due to improper surface preparation or too much joint movement. Cohesive failure occurs when sealant tears down the center of the joint due to inadequate sealant thickness or too much joint movement. Finally, reversion occurs when sealant traps water behind the joint and is identified by dark and dirty sealant, typically on a horizontal joint.

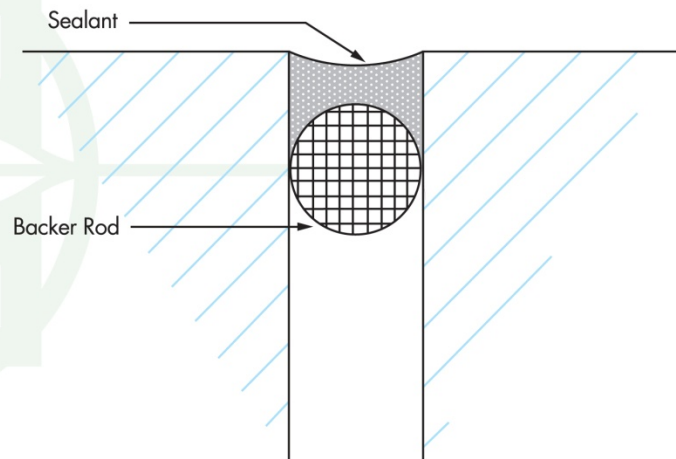
Correct preparation of the joint surfaces before re-application of a sealant is important to ensure proper adhesion. The surfaces must be removed of all contaminants, including the



previous sealant material, paint, rust and other corrosion, water, grease, etc. The surfaces should also be dry and free from dust and grit, which can be removed using dry compressed air or brushes. The Association should ensure the manufacturer's instructions are followed in determining if the substrate is compatible with the sealant and that the chemical cleaners and solvents used to prepare the surfaces are also compatible with the sealant.

The contractor's bid should note the type of caulk proposed and indicate that installation will follow the manufacturer's specifications. The manufacturer of the joint sealant usually has specifications that govern the use or application of flexible backer rods to seal wide gaps in the joint before caulk is applied. The contractor's bid or proposal should address this possible application noting the adherence to the sealant manufacturer's specification for the proposed sealant product. Backer rods reduce the volume of caulk required and minimize the chance of cohesion failure. The following detail depicts a control joint with sealant and a flexible backer rod. Sealant installation at window perimeters comprises a similar detail:

SEALANT AT CONTROL JOINT DETAIL



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Several types of caulk are available with significantly different weathering and elongation properties. We recommend a silicone-based or polyurethane-based caulk. The major advantage of polyurethane-based caulks is their ability to bond to most construction surfaces without special preparation, such as primer application, as is required for alternate materials like silicone caulk. With proper surface preparation, i.e., removing surface contaminants, silicone-based caulks perform better than most other caulk materials. The weathering and elongation properties of silicone-based caulk give it a much longer useful life than other caulk materials.

We recommend Granville Beach replace up to fifty percent (50%), or 32,000 linear feet of joint sealant, by 2021 and every eight years thereafter in conjunction with façade repairs. We note this information on Line Item 1.540 of *Reserve Expenditures*.

Soffits – The building includes approximately 7,000 square feet of finished soffits at the 2nd floor parking areas and lobby entrance area. The soffits exhibit areas of damage, finish deterioration and previous repairs.



Previous repairs at soffit

The soffits require paint applications and repairs up to every 10 years. We include expenditures for these activities by 2020 and every 10 years thereafter. We note this information on Line Item 1.590 of *Reserve Expenditures*.

Walls, Concrete - The Granville Beach exterior includes 47,000 square feet of concrete structural members and façade with a coating application. The Association completed concrete repairs in 2011. The coating likely dates to 2003 to 2005. We note a significant amount of previous repairs, areas of unrepaired cracks and coating deterioration.



Concrete crack



Concrete crack



Concrete cracks



Previous concrete repairs

We discuss solutions and procedures related to concrete restoration in the following narrative.

Over time, continual exposure from weather and wind creates dispersed concrete spalls and cracks. The location and amount of deterioration is variable due to the non-uniform nature of the concrete pours and different weather exposures. The continued exposure of the concrete to weather creates deterioration of the building exterior in a random but progressive manner.

Repairs to the deteriorated concrete include cleaning all areas of debris and dirt, the selective cutout and replacement of all deteriorated concrete and reinforcing steel (rebar), and



crack repairs. Replacements should use a non-chloride high strength concrete repair mix to minimize future deterioration. Granville Beach should also require the contractor to specify the use of epoxy coated reinforcement bars when replacements are necessary. The use of epoxy coated reinforcement bars minimizes future metal deterioration or rust.

Periodic liquid-applied coatings serve to inhibit deterioration of the exterior concrete. Coatings on concrete must allow entrained moisture in the concrete to migrate to the concrete surface and evaporate. A non-permeable coating traps this moisture and increases concrete spalling and eventual degradation of the coating. Coatings have a useful life of up to 20 years. Two common manufacturers of façade coatings are *Modac* and *Sonneborn*.

We recommend the Association budget for concrete façade inspections and repairs up to every eight years. We include allowances for these repairs by 2021 and every eight years thereafter. We recommend the Association budget for the following work:

- Complete inspection
- Partial depth replacement of up to one percent (1%) of the concrete
- Crack repairs to up to five percent (5%) of the concrete
- Application of a coating to the repaired areas only
- Engineering fees
- Scaffolding
- Sidewalk protection

We depict this information on Line Item 1.660 of *Reserve Expenditures*. The costs of these exterior renovations will vary based on the actual amount of concrete replacements and repairs identified as necessary from the invasive pre-restoration phase of the project.

In addition, we recommend the Association budget for coating applications by 2021 and again by 2037. We include this information on Line Item 1.665 of *Reserve Expenditures*.

Walls, Masonry - Masonry comprises approximately 34,000 square feet of the exterior walls. The Association completed masonry repairs in 2011. We note the following components and conditions of the masonry:

- Face brick masonry
- Masonry exhibits a significant amount of previous repairs
- Shelf angles at 3rd floor lack flashing/weep systems and exhibit rust/deflection
- Caps at base structure parapet walls lack flashing (sealant deterioration evident at caps)
- Base structure masonry exhibits cracks, joint deterioration and efflorescence
- Tower masonry exhibits areas of joint deterioration



Tower masonry joint condition



Rust at shelf angle and lack of flashing



Crack in masonry at parapet wall at base structure



Efflorescence at base structure at east elevation



Lack of flashing beneath cap and efflorescence at base structure

We advise a complete inspection of the masonry, and partial repointing with related masonry repairs up to every eight years to forestall deterioration. We elaborate on solutions and procedures necessary for the optimal maintenance of masonry walls in the following discussion.

Masonry generally requires less maintenance than other types of exteriors. However, masonry is not maintenance free. Masonry exteriors should last the life of the building with proper maintenance. Granville Beach should plan for the periodic inspection of the masonry to identify and repair areas of deterioration. Common types of masonry deterioration include efflorescence, spalling and cracking.

The primary cause of efflorescence, cracks and face spall is water infiltration; therefore, prevention of water infiltration is the principal concern for the maintenance of masonry applications. Masonry walls normally shed storm water and condensate from behind the wall through weep holes. However, trapped water within masonry walls can cause corrosion of metal masonry ties, studs, structural members and potentially damage building interiors. The first sign of water infiltration is usually a water stain. Eventually, water infiltration can lead to

deterioration of the masonry. If left unrepaired, water infiltration can lead to efflorescence, cracks and face spall as described below.

Trapped water can also migrate through areas of cracked mortar or other points within the cavity of a masonry wall. This moisture then typically migrates to the exterior face of the masonry where it evaporates. As the moisture evaporates, it deposits soluble white salts either on the surface as efflorescence or below the surface as subflorescence. Efflorescence mars the appearance of the masonry, is typically harmless but can also indicate a harmful condition known as subflorescence. Subflorescence within a masonry unit can create pressure that will eventually spall the masonry face. In addition, accumulated (trapped) storm water within or behind mortar joints in conjunction with inclement weather can also gradually spall masonry, create mold or damage adjacent components, i.e., windows or interior finishes. Spalling is a form of deterioration where small fragments of masonry break away from the wall system. Spalls can also occur as a result of a chemical reaction or from movement of a building structure. Spalled masonry may eventually dislodge individual masonry units.

Repointing is a process of raking and cutting out defective mortar to a depth of not less than $\frac{1}{2}$ inch nor more than $\frac{3}{4}$ inch and replacing it with new mortar. Face grouting is the process of placing mortar over top of the existing mortar. We advise against face grouting because the existing, often deteriorated mortar does not provide a solid base for the new mortar. New mortar spalls at face grouted areas will likely occur. One purpose of a mortar joint is to protect the masonry by relieving stresses within the wall caused by expansion, contraction, moisture migration and settlement. Repointed mortar joints are more effective if the mortar is softer and more permeable than the masonry units, and no harder or less permeable than the existing mortar. The masonry contractor should address these issues within the proposed scope of work.



The contract for repairs should also include attention to other related activities such as repair and partial replacement of window sills, lintel beams and deteriorated masonry. We recommend the contract for masonry repairs include a thorough inspection of horizontal masonry such as copings or sills as these areas are prone to accelerated deterioration. Together, these aggregated capital repairs maximize the useful life of a masonry wall system.

A complete inspection of the exterior walls can only identify the exact scope of masonry repairs and replacements. Based on the age and condition of the tower masonry, we recommend the Association budget for the following activities:

- Complete inspection of the masonry
- Repointing of up to five percent (5%) of the masonry
- Replacement of up to one percent (1%) of the masonry
- Paint applications to the 3rd floor shelf angles
- Flashing and weep installation at ten percent (10%) of the 3rd floor shelf angles

We recommend the Association anticipate this work at the tower by 2021 and every eight years thereafter.

Based on the conditions of the base structure, we recommend the Association budget for the following by 2018 and every eight years thereafter:

- Complete inspection of the masonry
- Repointing of up to eight percent (8%) of the masonry
- Replacement of up to one percent (1%) of the masonry
- Flashing and weep installation at the parapet wall caps

We note this information on Line Item 1.820 of *Reserve Expenditures*.

Windows, Common - The Association maintains approximately 4,000 square feet of common window systems at the following locations:

- Lobby
- Garage 1st floor
- 2nd floor

- 29th floor



Cracked common window at garage



Finish deterioration at lobby window system

The common window systems primarily comprise aluminum frames with single pane glass. Exceptions include dual pane glass at the laundry room and 2nd floor staff area. The window systems are primarily original and in poor condition.

The useful life of aluminum frame windows is up to 50 years. The useful life of the windows is based on the occurrence of water infiltration, thermal inefficiencies compared to present technology, type of frame, availability of replacement parts and aesthetics. Based on these factors, we recommend the Association anticipate replacement of these common window systems by 2021. We depict this information on Line Item 1.980 of *Reserve Expenditures*.

Interior Building Elements

Elevator Cab Finishes - Four elevators serve the building. The passenger elevator cab finishes consist of:

- Carpet floor coverings
- Laminate wall coverings
- Metal ceiling with light fixtures



Elevator cab finishes

The finishes were replaced from 2015 to 2016. The useful life of the elevator cab finishes is up to 20 years. We recommend the Association budget for renovation of the cab finishes by 2034. We include this information on Line Item 2.100 of *Reserve Expenditures*. Granville Beach should fund interim elevator cab floor covering replacements through the operating budget.

Exercise Equipment - The exercise room contains the following types of cardiovascular aerobic training equipment:

- Elliptical
- Stationary cycles
- Treadmills

The exercise room contains the following types of strength training equipment:

- Benches
- Weight training machines



The equipment varies in age. The useful life of cardiovascular equipment of this type is from 5- to 10-years. The useful life of strength training equipment of this type is up to 15 years. We recommend the Association anticipate periodic phased replacement of the exercise equipment from continued but naturally varied use and advances in technology. We recommend Granville Beach anticipate replacement of all cardiovascular equipment, the room finishes as needed and up to fifty percent (50%) of the strength training equipment every six years beginning by 2019. The times and costs of these replacements may vary. However, we judge the amounts shown on Line Item 2.160 of *Reserve Expenditures* sufficient to budget appropriate reserves.

Floor Coverings, Carpet, Hallways - Carpet comprises 2,100 square yards of the common area hallway floor coverings. Contractor measurements will vary from the actual floor area due to standard roll lengths, patterns and installation waste. The carpet was replaced in 2011 and is in fair condition. We note stains and deterioration at seams.



Residential hallway



Stains at carpet

We suggest the Association budget to replace the carpet every 8- to 12-years to maintain a positive appearance of the common areas. We include the following solutions and procedures pertaining to replacement of the carpet for the benefit of present and future board members.

The appearance, texture and longevity of carpet are determined by the type of fiber, pile and color. There are many types of fibers available. Due to the high volume of traffic in the common areas, we suggest the use of a nylon fiber as it is durable, resilient and stain resistant. There are also multiple types of carpet piles available. Loop piles, such as Berber, or angle cut piles with woven patterns are ideal for high traffic areas. We suggest the use of mid-tone colors to mask traffic patterns and stains. The contractor should follow the manufacturer's installation guidelines and the *Carpet and Rug Institute's* Carpet Installation Standard.

We advise the Association anticipate replacement of the carpet by 2023 and every 12 years thereafter. We base our replacement cost on Line Item 2.200 of *Reserve Expenditures* on a medium traffic weight nylon carpet of 32 ounces of fiber per square yard. Granville Beach should continue to fund vacuuming, spot removal and schedule periodic cleanings through the operating budget to maximize the life of the carpet.

Light Fixtures, Hallways - There are 286 interior ceiling mounted light fixtures located throughout the residential hallways. The light fixtures utilize fluorescent lamps. The interior light fixtures were replaced in 2011 and have useful lives of up to 25 years. Granville Beach may desire replacement for aesthetic reasons or to coordinate their replacement with more significant renovations or paint applications. We consider the times of such replacements discretionary. For the purposes of this study, we recommend a total replacement of the light fixtures by 2035 in coordination with replacement of the carpet. We include this information on Line Item 2.560 of *Reserve Expenditures*.

Lobby - The lobby components vary in age and condition. These components comprise the following:

- Tile floor covering (areas of wear and damage evident)
- Paint finishes
- Doorman station
- Furnishings
- Light fixtures
- Automatic doors (three total)



Lobby



Lobby automatic door

We recommend the Association anticipate a lobby renovation up to every 25 years. The lobby provides a first impression for guests and prospective buyers of condominiums.



Discretionary redecorating and refurbishing are a common practice in apartment style associations with a single main entrance to provide a good "first impression." Periodic redecorating and refurbishing of the lobby is therefore a prudent practice. We suggest the Association budget an allowance to renovate the lobby by 2021 and again by 2044.

The automatic doors have a useful life of up to 15 years. We include an expenditure for their replacement by 2021 and again by 2036. We note this information on Line Items 2.600 and 2.601 of *Reserve Expenditures*.

Mailboxes - The 312 unit mailboxes are located in the lobby at Granville Beach. The mailboxes are likely original and have a limited capacity. Mailboxes of this type have useful lives of up to 35 years. We recommend the Association anticipate replacement of the mailboxes by 2021, concurrent with a lobby renovation. We include this information on Line Item 2.700 of *Reserve Expenditures*. The Association should verify the new mailboxes meet the specifications of the *United States Postal Service*. Replacement could potentially require a wall renovation to allow for larger mailboxes.

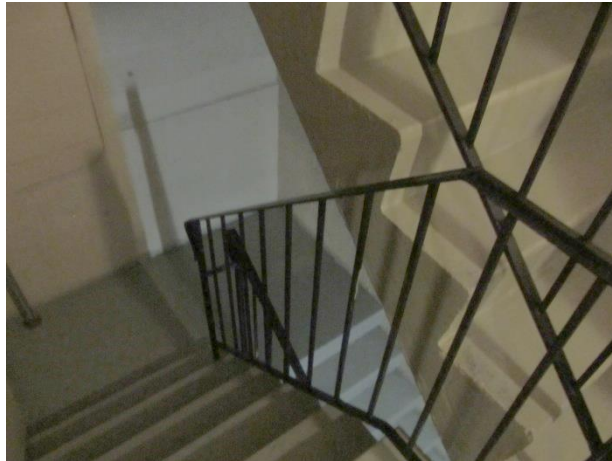
Paint Finishes, Hallways - The common area hallways have approximately 79,000 square feet of paint finishes on the walls and ceilings. These finishes date to 2011. We note areas of scuffs and damage. The useful life of a paint finish on interior walls and ceilings is from 8- to 12-years. However, the actual times of paint applications are discretionary based on desired appearance and varied rates of use. We recommend the Association continue to maintain a uniformly clean and consistent appearance of interior paint finishes throughout the common areas. Due to the high volume of traffic in the common entry areas, Granville Beach may



anticipate a diminished useful life of the paint finishes in these isolated areas. Normal maintenance should include interim partial or touchup paint applications as needed.

A successful application of paint requires complete preparation of the surface through removal of all loose, peeled or blistered paint before application of the new paint finish. The contractor should then wet wipe the surface to remove all dust and dirt. The contractor should follow the manufacturer's directions for paint application and protect other surrounding elements from paint spatter. The contractor should specify the name of the paint, proposed method and steps of paint application in their bid. Based on the age and condition of the paint, we recommend the application of a paint finish by 2023 and every 12 years thereafter concurrent with replacements of the carpet. We depict this information on Line Item 2.800 of *Reserve Expenditures*. Since the development was built before 1978, the Association should verify that the contractor will comply with the Environmental Protection Agency's (EPA) 'Renovation, Repair & Painting Rule' (<http://www.epa.gov/lead/pubs/renovation.htm>).

Paint Finishes, Stairwells - In addition to the hallway paint finishes, the Association maintains the paint finishes in the two stairwells. The paint finish exhibits areas of scuffs and damage.



Stairwell

We estimate a useful life for the paint finishes of 15- to 20-years in these areas with interim partial or touch-up paint applications as normal maintenance. Due to the minimal traffic in the stairwells, the useful life of these paint finishes is significantly longer than that of the hallway paint finishes. Based on their condition, we recommend the Association budget for the next paint finish application in the stairwells by 2023 and again by 2043. We include this information on Line Item 2.820 of *Reserve Expenditures*.

Party Room - The common area amenities include a party room on the 29th floor. The party room and 29th floor hallway components include:

- Carpet floor coverings
- Vinyl floor coverings
- Vinyl wall coverings
- Paint finishes
- Light fixtures
- Furnishings
- Kitchen
- Rest rooms (two adjacent)



The components appear dated. We recommend renovations of the party room and 29th floor hallway up to every 20 years. The specific time of any interior renovation is somewhat discretionary and may be implemented by the Board prior to the end of its useful life. We recommend Granville Beach anticipate a party room renovation by 2021 and again by 2039. We note this information on Line Item 2.840 of *Reserve Expenditures*.

Building Services Elements

Air Handling and Condensing Units - The Association utilizes the following air handling and condensing units:

- Air Handling Units, Corridors – two units, possibly original coils, 15,120- to 16,110-CFM (Cubic Feet per Minute) each, useful life of the coils and controls of up to 30 years, replacement of the coils and controls included in the Line Item “**Boiler System Project**”
- Air Handling Unit, 29th Floor – one unit, 10,400-CFM, possibly original coils, useful life of the coils and controls of up to 30 years, we assume replacement of the coils and controls included in the Line Item “**Boiler System Project**”
- Air Handling Unit, Lobby – one *Carrier* water cooled indoor self-contained system, installed 1995, useful life of up to 30 years
- Air Handling and Condensing Units, Elevator Room – two *Mitsubishi* ductless split systems, two-tons cooling, installed recently, useful life of up to 20 years
- Air Handling and Condensing Units, Party and Exercise Rooms – five *Carrier* split system condensing units with air handling units, five-tons cooling capacity, installed 2011, useful life of up to 20 years



Corridor air handling unit



Air handling unit for 29th floor



Air handling unit for 1st floor



Condensing unit for elevator room



Condensing units for exercise and party room

The units are in reported satisfactory condition. We recommend the Association conduct capital repairs to large capacity air handling units in lieu of complete replacement. These capital repairs include replacement of the coils, controls, motors and other components. Air handling units consist of various combinations of motors, fans, belts, dampers, coils and controls enclosed in a sheet metal cabinet. Maintenance of air handling units should include:

- Annually
 - Clean the coils and drain pans
 - Clean the fan assembly and inspect the fan drive system (pulleys, belts, motors and bearings) for wear and alignment
 - Inspect and clean all switch, thermostat and starter contacts
 - Inspect all controls
- Semi-Annually
 - Lubricate motors and bearings
 - Inspect dampers for proper operation. Clean and lubricate moving parts
 - Check fan belt tension and adjust as needed
- Quarterly (or more often as needed)
 - Change filters, if disposable, or clean permanent filters

The Association should fund these expenses through the operating budget. We recommend the Association budget for the following replacements:

- Air Handling Units, Corridors – subsequent coils and controls by 2045
- Air Handling Unit, 29th Floor – subsequent coils and controls by 2045
- Air Handling Unit, Lobby – by 2020 (We assume replacement with a different type of system. The cost of the project is indeterminate pending the design of the system.)
- Air Handling and Condensing Units, Elevator Room – by 2031
- Air Handling and Condensing Units, Party and Exercise Rooms – by 2030

We note this information on Line Items 3.020 through 3.024 of *Reserve Expenditures*.

Boiler System Project - The Association utilizes two *Orr & Sembower* gas-fired steam boilers with capacities of 346-BHP (Boiler Horsepower) and 11,619-MBH (thousand British Thermal Units per hour) each for the building heat and domestic hot water systems.



The *Elara* report dated May 24, 2016 details the existing boiler system, conditions, energy efficiency improvement opportunities and scope of recommended near term replacement. The useful life of boilers of this capacity and use is up to 50 years in our experience. Therefore, we concur with the recommendation of *Elara* to plan for near term replacement of the boiler system. We include an expenditure based on information provided by *Elara* for replacement of the boiler system by 2020. We assume the following summarized scope based on the scope provided by *Elara*:

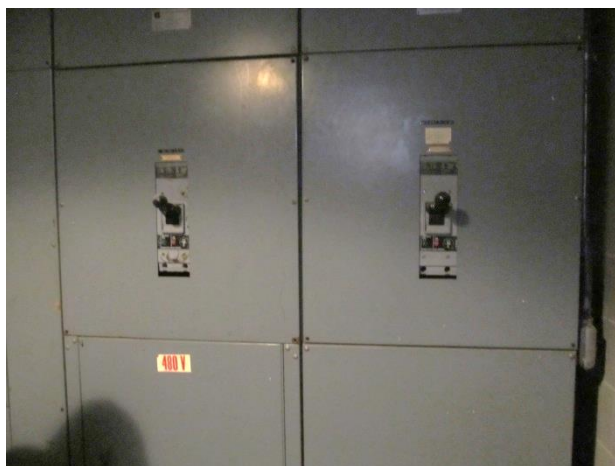
- Replacement of the existing boilers with nine hot water boilers
- Replacement of the coils in the corridor and 29th floor air handling units
- Replacement of the building heating system pumps
- Installation secondary pumps for the garage and make-up air loop
- Conversion of the unit heaters from steam to hot water
- Installation of two new garage unit heaters
- Installation of new domestic hot water storage tank
- Replacement of the domestic hot water heat exchangers
- Replacement of the controls with digital systems and installation of a building automation system

Future updates of this Reserve Study will include Reserve Expenditures for replacement of the boiler systems based on the exact type of boilers installed. We note this information on Line Item 3.105 of *Reserve Expenditures*.

Building Automation System – As stated in the previous narrative “**Boiler System Project**”, the project to replace the boilers include replacement of the pneumatic controls with digital controls and installation of a building automation system. Building automation systems are also often referred to as energy management systems. We anticipate a useful life of up to 15 years for this system and recommend the Association budget for subsequent replacement by 2034. Future updates of this Reserve Study will adjust the timing and cost based on the exact scope of the system installed. We depict this information on Line Item 3.170 of *Reserve Expenditures*. The Association should fund upgrades to the system software and interim replacement of sensors through the operating budget.

Electrical System - The electrical system at Granville Beach is primarily original to construction. Based on our conversations with the Building Engineer, the system is in reported satisfactory condition. The system includes:

- Breaker and fuse type circuit protection panels for low ampacity circuits
- Copper wires
- 60- to 100-Amps on average to the units
- Original distribution panels
- Homeowners are responsible for the electrical system from the meter to the unit



Distribution panels



Fuse type circuit protection panel

The exact locations and conditions of all the electrical system components were not ascertained due to the nature of their location and the non-invasive nature of our inspection. For purposes of this Reserve Study, we exclude the electrical systems within the units based upon information from the Building Engineer. We give a brief overview of electrical system components in the following sections of this narrative.

Primary Switchgear - The primary switchgear is located where the electric supply comes into the building. Switchgear can include associated controls, regulating, metering and protective devices, and is used for the transmission, distribution and conversion of electric power for use within the building. Switchgear components have a useful life of up to and sometimes beyond 70 years. Replacement is often determined by a desired upgrade of the entire electrical system.

Transformer - A transformer is an electric device with two or more coupled windings used to convert a power supply from one voltage to another voltage. Transformers within a building lower the supplied electrical voltage to a level that can be utilized by the building's equipment and unit owners. Transformers do not utilize mechanical components and therefore have a long useful life. However, the Association should anticipate periodic replacement of a limited quantity of transformers.

Distribution Panel - The distribution panel is an electric switchboard or panel used to control, energize or turn off electricity in total or for individual circuits. The panel also distributes electricity to individual and controllable circuits. One or more distribution panels may exist and further distribute electricity to individual panel boards for each unit. The distribution panel is enclosed in a box and contains circuit breakers, fuses and switches. Distribution panels have a useful life of up to and sometimes beyond 70 years.

Bus Bar - A bus bar is an electric conductor that serves as a common connection for two or more circuits and carries a large current. The metal enclosure contains factory assembled conductors, usually copper or aluminum bars or tubes. Bus bars typically convey electricity in a vertical riser to the multiple stories in the building. This component has an indefinite useful life and would rarely require replacement in total unless an upgrade of the capacity of the electrical system is desired.

Circuit Protection - Once electricity is distributed throughout the building and is at a usable voltage level, the electricity is divided into circuits. Each circuit requires circuit protection. Circuit protection is necessary to prevent injury and fires, and minimize damage to electrical components and disturbances to the electrical system. Abnormalities in the circuit can include overloads, short circuits and surges. Circuit protection devices are commonly referred to as circuit breakers and fuses. For the protection of the circuits in the units and common areas, we recommend the use of only circuit breakers as they are safer than fuses. However, the use of fuses is common for equipment like emergency

systems and individual items of equipment. Fuses with a low capacity rating can easily be replaced with fuses of a higher rating resulting in an unprotected, overloaded and unsafe circuit. The circuit protection panels have a useful life of up to and sometimes beyond 70 years.

Conductors - Conductors are the electrical wires that convey electricity to the units, light fixtures, receptacles and appliances. Conductors in typical high and low capacity circuits are copper, as is reported the case at Granville Beach. Copper conductors have an indefinite useful life.

Conductor Insulation and Conduit - Conductor insulation provides protection against the transfer of electricity. Conductor insulation can eventually become brittle and damaged from rodents or heat from many years of service. Conductor conduit is a pipe or tube used to enclose insulated electric wires to protect them from damage. Steel conductor conduit, although galvanized, will eventually rust if used in damp conditions. The useful life of conductor insulation and conduit is indeterminate.

Changes in service loads over time can cause arcing conductor connection points and line overloads within a system. Periodic thermoscans of primary switchgear and distribution panels are advisable and can detect defective or prematurely aging electrical system components. We recommend the Association conduct thermoscans of the distribution panels and circuit protection panels, and inspections of the transformers for any indications of arcing, burning or overheating on a regular basis, funded through the operating budget. Verification of the integrity of all connection points minimizes the potential for arcing and fires. The Association should repair or replace all loose and corroded parts at that time.

Due to the limited amount of mechanical components, electrical system components have a long, often indeterminate, useful life. The Association may find it necessary to replace individual components of the electrical system due to service load changes and changes in building code requirements. However, future changes in service loads and the requirements of future building code changes are indeterminate.

We recommend the Association budget to replace the main switchgear, distribution and circuit protection panels by 2036. We recognize that the Association may be required to replace the fuse type panels prior to 2036. Updates of this Reserve Study will consider possible changes in the scope and times of component replacements based on the conditions, including the need for replacement of the wires. We note this information on Line Item 3.300 of *Reserve Expenditures*.

Elevators, Traction - The building utilizes four *Motion Control Engineering (MCE)* traction elevators. The Association began modernization of the elevators in 2015 and will complete the project in 2016. The elevators utilize programmable logic computer controls. We include an expenditure of \$89,000 in 2016 for the remainder of the project at the direction of Management.



Elevator controls

Elevator system components that utilize programmable logic computer controls provide many years of service and when cared for by a maintenance contract, can have useful lives of up to 35 years. Therefore, we do not recommend the Association budget for subsequent

replacement of the controls during the next 30 years. We depict this information on Line Item 3.360 of *Reserve Expenditures*.

Heat Exchangers, Domestic Water - The building utilizes two building heat shell and tube style heat exchangers and two domestic water shell and tube style heat exchangers in conjunction with the boilers. The Association will eliminate the need for the building heat heat exchangers and replace the domestic water heat exchangers in the near term, as noted in the Line Item “**Boiler System Project**”.



Domestic water heat exchangers

The useful life of the domestic water heat exchangers is up to 25 years. We recommend the Association budget for subsequent replacement of the domestic water heat exchangers by 2035. We note this information on Line Item 3.465 of *Reserve Expenditures*. We recommend the Association periodically inspect the heat exchangers and conduct repairs as needed from the operating budget.

Life Safety System - The life safety system at Granville Beach includes the following components:

- Audio/visual fixtures

- Control panel
- Detectors
- Voice communication system at the stairwells
- Wiring

The Association will complete modifications required to comply with the City of Chicago Life Safety and High Rise Ordinance in 2016. We include an expenditure of \$110,000 in 2016 for these remaining modifications at the direction of Management. The life safety system was installed in 2014 and is in reported satisfactory operational condition. The digital display on the *Honeywell* central panel read “*System Normal*” at the time of our inspection.



Central life safety panel

Life safety system devices have useful lives of up to 25 years with proper maintenance. Control panels have a useful life of up to 15 years. Changes in technology or building codes may make a replacement desirable prior to the end of the functional life. With consideration of the operational condition and age, we recommend the Association budget for replacement of the devices by 2037, and the control panel by 2028 and again by 2042.

Our estimate of future cost considers only that amount necessary to duplicate the same functionality. Local codes or ordinances at the actual time of replacement may require a betterment as compared to the existing system. A betterment could result in a higher, but at this



time unknown, cost of replacement. We note this information on Line Items 3.554, 3.555 and 3.560 of *Reserve Expenditures*. Our cost assumes reuse of the existing wiring.

Light Fixtures, Exit and Emergency - The common areas contain approximately 190 exit and emergency light fixtures. This quantity includes the remote emergency light fixtures at the hallways. The fixtures vary in age and primarily appear dated. The useful life of these fixtures is up to 25 years. We advise replacement as a single event by 2021 and again by 2044. We note this information on Line Item 3.580 of *Reserve Expenditures*. The Association should periodically test the batteries to confirm the appropriate amount of operational time. The Association should replace the batteries as needed when operational times decrease to an unacceptable limit and fund this ongoing activity through the operating budget.

Pipes - The Association is responsible for maintenance and replacement of the piping system sections arranged in vertical and horizontal segments. We regard each segment of pipe rising one story or floor a “riser section.” The majority of these pipes are located in vertical chases and lesser quantities above or within walls and ceilings in the building. A riser comprises a complete set of riser sections of vertical pipe within a chase. The vertical pipe risers connect to usually shorter segments of horizontal branch pipes. The exact locations and conditions of the pipes were not ascertained due to the nature of their location and the non-invasive nature of our inspection. Based on our conversation with the Building Engineer, we estimate the following quantity of riser sections and types of pipe materials within Granville Beach:

Type	Material	Risers	Floors	Riser Sections
Building Heating and Cooling (Supply and Return)	Black steel	14	29	406
Domestic Cold Water Supply	Galvanized steel	16	29	464
Domestic Hot Water Supply	Galvanized steel	16	29	464
Domestic Hot Water Return	Galvanized steel	16	29	464
Sanitary Waste and Disposal	Black steel	16	29	464
Vent	Black steel	16	87	1,392
			Total	3,654

We comment on the respective quantities and conditions of the *riser sections* in the following sections of this narrative.

Building Heating - The black steel building heating riser sections are original. The Association recently replaced the expansion joints at the 15th floor. The Building Engineer reports no deficiencies. Exceptions include the regulator valves at the unit radiators. We assume remediation of the regulator valves as part of the boiler system project or replacement costs billed back to the owners. The useful life of these building pipes is up to and sometimes beyond 80 years.

Domestic Water - The supply and return galvanized steel domestic water risers are primarily original. The Association recently replaced the rest room supply and return hot water risers at the 01, 03, 08 and 10 tiers at floors 15-17. The Building Engineers reports a history of leaks, low pressure complaints, thinning of the pipe walls and development of occlusions within the pipes.



Domestic water piping

The useful life of galvanized domestic supply and return pipes is up to and sometimes beyond 70 years. The first piping system usually to experience problems is domestic hot water. The rate of build-up varies based on flow rates, minerals in the water and temperature. Occlusions from deposits eventually develop, reduce water pressure and clog pipes. Galvanized pipe is zinc coated steel which slows oxidation or rusting. The galvanized pipe provides a surface texture for minerals such as calcium and magnesium (water hardness minerals) to adhere. These minerals build-up at a faster rate on galvanized piping when compared to copper piping. Also, corrosion of these pipes will eventually result in pitting of the interior surface and pinhole leaks. We recommend the Association budget funds to replace the galvanized water piping with copper piping. Copper piping is the predominant type of pipe used in new construction for domestic water piping.

Sanitary Waste Disposal and Vent - The black steel sanitary waste disposal and vent riser sections are original. The Building Engineer reports no deficiencies. The useful life of these vent and sanitary waste disposal pipes is up to and sometimes beyond

80 years. These pipes typically deteriorate from the inside out as a result of sewer gases, condensation and rust.

Valves - The piping systems include various valves. Identification of a typical useful life and remaining useful life for individual valves is difficult. Associations typically replace valves on an as needed basis in our experience. Therefore, we recommend the Association replace small diameter valves as needed through the operating budget.

Our cost for a single riser section assumes replacement of all pipes located within each wall opening, associated branch piping, fittings and minimal interior finishes. However, the cost does not include temporary housing for affected residents or pipes within the units or significant interior finishes.

The Association budgets an amount in the annual operating budget for minor pipe repairs and replacements. We recommend the Association continue to fund interim pipe replacements, prior to more aggregate replacements identified in the following paragraphs, from the operating budget. We also recommend the Association contract for an invasive investigation of the condition of the piping system prior to beginning more aggregate replacements, funded through the operating budget.

We recommend the Association budget the following expenditures:

- Building heating – phased replacement beginning by 2041 and concluding by 2045
- Domestic water, waste and vent - phased replacement beginning by 2019 and concluding by 2028

An invasive analysis of the piping systems will provide various replacement options. Replacement of the systems as an aggregate event will likely require the use of special assessments or loans to fund the replacements. We depict this information on Line Items 3.600 and 3.605 of *Reserve Expenditures*.

Although it is likely that the times of replacement and extent of repair costs may vary from the budgetary allowance, Granville Beach could budget sufficient reserves for the beginning of these pipe replacements and have the opportunity to adjust its future reserves up or down to meet any changes to these budgetary estimates. Updates of this Reserve Study would incorporate changes to budgetary costs through a continued historical analysis of the rate of deterioration and actual pipe replacements to budget sufficient reserves.

Pumps - Granville Beach utilizes the following major pumps:

- Building Heating - 15-HP, two each, to be replaced as part of the boiler system project, include variable frequency drives, useful life of up to 25 years
- Domestic Cold Water - 15-HP, three each, replaced 2015, include variable frequency drives, useful life of up to 25 years, reported satisfactory condition
- Fire Suppression - 100-HP, one each, original, includes a jockey pump, useful life of up to 60 years, reported satisfactory condition
- Gas Booster - 2-HP, two each, age not available at the time of our inspection, useful life of up to 25 years, reported satisfactory condition
- Sump/Sewage Ejection – two .75-HP and two 3-HP, four total, age not available at the time of our inspection, useful life of up to 20 years, reported satisfactory condition



Building heating pumps



Domestic cold water pumps



Gas booster pumps



Fire suppression pump



Sump/sewage ejection pumps



Major pumps included in this Reserve Study are those with a motor drive of at least five-HP. The Association should replace or repair all pumps with motor drives less than five-HP as needed and fund this ongoing maintenance activity through the operating budget.

The Association may choose to rebuild pumps prior to complete replacement. However, this activity becomes less desirable as pumps age due to the scarcity of parts. We regard interim replacements of motors and component parts as normal maintenance and base our estimates on complete replacements. An exact replacement time for each individual pump is difficult, if not impossible, to estimate. We recommend the following replacement schedules for the pumps:

- Building Heating – subsequent replacement by 2041
- Domestic Cold Water - replacement by 2036
- Fire Suppression - replacement by 2028
- Gas Booster - replacement by 2020 and again by 2041
- Sump/Sewage Ejection - replacement by 2020 and again by 2038

We note this information on Line Items 3.700 through 3.704 of *Reserve Expenditures*. Our costs include allowance for replacement of the variable frequency drives (VFD) and controls.

Security System - Granville Beach utilizes the following security system components for added security within the building and outside grounds:

- Automated card reading system (6 access points)
- Cameras (15)
- Multiplexers (4)
- Recorders (2)

The cameras vary in age. The card reader system was installed in 2011. We include a Management-provided expenditure in 2016 to install security cameras at the elevators. We anticipate a useful life of up to 15 years for the system components. The Association should anticipate replacement of up to fifty percent (50%) of the security system components by 2020

and every six years thereafter. We include this information on Line Item 3.820 of *Reserve Expenditures*.

Trash Chute and Doors - The Association maintains one trash chute. The chute and doors are original and reported in satisfactory condition. The useful life of trash chutes and doors is up to 65 years. However, this useful life is dependent upon the condition of the doors. Damaged doors or poor door operation will result in a decreased useful life. The Association should fund interim repairs and partial replacements of the doors through the operating budget. Deterioration of the chute stems from corrosion and isolated tears or rips from large items of trash. It is difficult to predict the actual time of replacement in consideration of the variable and unpredictable wear and tear over many years. We recommend the Association prepare for replacement by 2033. Line Item 3.880 of *Reserve Expenditures* notes our estimate of future cost and anticipated time of replacement.

Trash Compactor - One trash compactor aids in refuse removal from the building.



The compactor was installed in 1997, is reported in satisfactory condition and has a useful life of up to 25 years. We recommend the Association plan for replacement by 2019 and again by 2041. We note this information on Line Item 3.900 of *Reserve Expenditures*.

Valves, Large Diameter - The building utilizes 14 large diameter valves at the main water connection and fire pump.



Valves at main water connection

The valves are primarily original. As the valves age, seals will deteriorate and mineral deposits will limit their operation. Large valves have a useful life of up to and sometimes beyond 50 years. We recommend the Association anticipate replacement by 2020. We include this information on Line Item 3.920 of *Reserve Expenditures*. The Association should replace or repair all remaining valves as needed and fund this ongoing maintenance activity through the operating budget.

Property Site Elements

Fishing Pier – The development includes a fishing pier at the east perimeter. The pier comprises concrete with a perimeter metal fence. The concrete exhibits areas of cracks and deterioration. The fence exhibits areas of damage.



Fishing pier concrete cracks

We recommend the Association budget for replacement of the concrete and fence up to every 40 years. We include an expenditure for this renovation by 2026. We note this information on Line Item 4.303 of *Reserve Expenditures*.

Vaulted Structure, West Perimeter - The west perimeter and lobby entrance area at Granville Beach are pedestrian and vehicular areas atop an underlying concrete structure. This elevated area comprises approximately 3,350 square feet. Due to the non-invasive nature of our inspection, we are unable to determine the exact composition of the west perimeter and lobby entrance area. Based on our visual inspection, experience with similar construction and knowledge of replacement/capital repair projects of this type, we surmise the west perimeter and lobby entrance area comprise the following elements:

- Concrete steps, sidewalks, pavement and planters (steps and sidewalks are colored and textured) (pavement includes a traffic coating)

- Perimeter flashing
- Underlying waterproof membrane atop the structure
- Elevated structural concrete

The concrete exhibits areas of cracks and deterioration. The ceiling beneath the elevated areas exhibits evidence of water infiltration.



Vaulted systems at west perimeter



Concrete deterioration at lobby entrance area



Cracks in concrete/coating at west perimeter



Evidence of water infiltration beneath west perimeter vaulted concrete

Waterproof membranes serving these types of areas generally have useful lives of up to 30 years with the benefit of interim repairs up to every 10 years. As the membrane ages and deteriorates, water infiltration through the structure and leaks into the space beneath will become



more frequent and widespread. Deterioration of the concrete structure beneath the membrane is also probable due to membrane leaks and normal aging of the concrete.

We recommend the Association budget for the following interim repairs by 2019 and again by 2039:

- Replacement of perimeter sealants
- Concrete crack repairs and patching
- Surface coating application (including traffic coating at pavement)
- Replacement of a limited amount of underlying membrane

We also recommend the Association plan to repair the concrete structure as necessary, and replace the membrane and all previously listed elements by 2029. We note this information on Line Items 4.959 and 4.960 of *Reserve Expenditures*.

Garage Elements

Concrete, Elevated Floors - The development includes approximately 18,000 square feet of exposed elevated cast in place concrete floor structure at the 2nd floor and 15,000 square feet of elevated indoor cast in place concrete floor structure at the 1st floor. These elevated floors include a traffic coating. The traffic coating is in poor condition. The traffic coating exhibits areas of wear, damage and cracks, primarily at drive lanes. The elevated floors include expansion joints. The ceilings beneath the elevated floors exhibit evidence of water infiltration and numerous previous repairs.



Traffic coating west at 2nd floor



Traffic coating west at 2nd floor



Numerous traffic coating repairs and areas of coating deterioration at 1st floor



Numerous traffic coating repairs and areas of coating deterioration at 1st floor



Evidence of water infiltration beneath 2nd floor garage level



Evidence of water infiltration beneath 2nd floor garage level



Evidence of water infiltration beneath 1st floor garage level



Evidence of water infiltration beneath 1st floor garage level

Concrete capital repairs should coincide with replacements or installation of the traffic coating. See the narrative “**Traffic Coating**” for our recommendations on protective surface applications. Concrete capital repairs and partial replacements prior to replacement or repair of the traffic coating are critical to protect the integrity of the system.

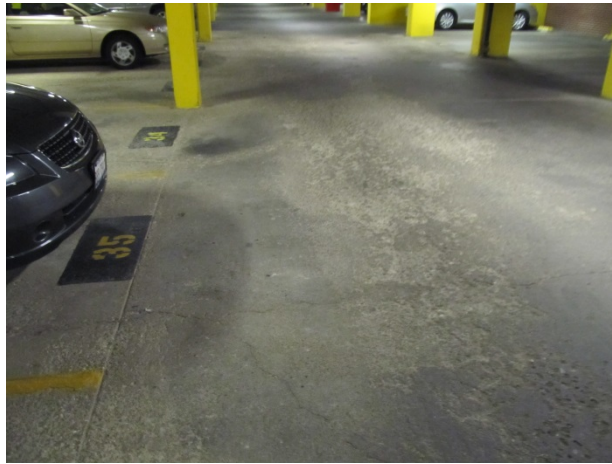
Concrete structures like these have indeterminately long useful lives with proper periodic maintenance, use of a protective coating on top of the elevated structural concrete floors and periodic capital repairs. We recommend the Association budget for the following repairs to the various concrete surfaces every 10- to 15-years:

- Complete inspection of the garage concrete
- Partial depth concrete replacement of a limited amount of the surface area of the concrete floors
- Partial depth concrete replacement of a limited amount of the surface area of the elevated structural concrete ceilings
- Remediation of structural concrete columns and beams as needed
- Crack repairs on all surfaces as needed
- Replacement of expansion joints as needed

We anticipate the need to conduct this work by 2019 and every 15 years thereafter. Line Item 7.300 of *Reserve Expenditures* notes our estimate of future costs and anticipated times of garage concrete repairs. In addition to the periodic repairs detailed above, we recommend the

Association clean the garage floors annually or seasonally as needed to prevent the buildup of salts, sand, vehicle fluids and other damaging chemicals. The Association should fund these ongoing maintenance activities through the operating budget.

Concrete, On-grade - Granville Beach maintains approximately 22,000 square feet of on-grade concrete at the basement level garage. The concrete exhibits cracks and surface spall.



Concrete surface spall and cracks at on-grade garage level

Concrete in this application has a useful life of up to 90 years although premature deterioration of isolated areas of concrete is common. We recommend Granville Beach budget for the following work by 2019 and every 15 years thereafter:

- Complete inspection of the floor
- Selective cut out and replacement of up to five percent (5%), or 1,100 square feet, of the on-grade concrete
- Crack repairs as needed

Line Item 7.360 of *Reserve Expenditures* notes our estimate of future costs and anticipated times of partial garage concrete replacements.

Exhaust System - The exhaust system for the garage includes the following components:

- Exhaust fans (one centrifugal)
- Louvers



Garage exhaust fan

The fan is possibly original and has a useful life of up to 30 years. The system lacks operational control through an integral carbon monoxide detection system. We recommend the Association budget for replacement of the system, including installation of an integral carbon monoxide detection system to improve energy efficiency, by 2020. We regard interim repairs or partial replacements of exhaust system components as normal maintenance. We note this information on Line Item 7.460 of *Reserve Expenditures*.

Fire Suppression System - Granville Beach maintains an automatic fire suppression system to protect the 37,000 square feet of indoor garage area. An automatic fire suppression system typically includes pipes, pipe fittings, sprinkler heads, valves and hangers. The system is original and in reported satisfactory overall condition.



Fire sprinkler system head

Proper operation of the fire suppression system in the event of a fire requires unobstructed sprinkler heads. The Association should keep the sprinkler heads and pipes free of ornamentations and coverings. Granville Beach should verify as normal maintenance that all sprinkler pipes remain on independent hangers.

The Association should periodically test the fire suppression system as mandated by the authority having jurisdiction and in compliance with the National Fire Protection Association. Granville Beach should fund these expenses through the operating budget.

Due to the higher ambient humidity or damp conditions of a garage as compared to air conditioned environments, we recommend the Association anticipate a useful life of up to 60 years for the fire suppression system and budget for its replacement by 2028. Our cost on Line Item 7.500 of *Reserve Expenditures* includes an allowance for replacement of the pipes, fittings, sprinkler heads, valves and hangers.

Light Fixtures - Approximately 70 light fixtures illuminate the parking garage. The light fixtures utilize T-8 fluorescent lamps. The light fixtures were replaced in 2008 and have a useful life of up to 30 years. We regard replacement of fixture components as normal



maintenance. We recommend the Association budget for their replacement by 2036. Line Item 7.600 of *Reserve Expenditures* notes our estimate of future cost and anticipated time of replacement. Our estimate of replacement assumes reuse of the electrical wiring.

Traffic Coating - As stated in the previous narrative “**Concrete, Elevated Floors**”, the development includes approximately 18,000 square feet of exposed elevated cast in place concrete floor structure at the 2nd floor and 15,000 square feet of elevated indoor cast in place concrete floor structure at the 1st floor. These elevated floors include a traffic coating. The traffic coating is in poor condition. The traffic coating exhibits areas of wear, damage and cracks, primarily at drive lanes. The elevated floors include expansion joints. The ceilings beneath the elevated floors exhibit evidence of water infiltration and numerous previous repairs. We anticipate a useful life of 10- to 15-years for the 1st floor coating and up to 10 years for the 2nd floor coating based on its exposure.

Salts and moisture-driven chemical reactions are detrimental to the integrity of an elevated structural concrete garage floor. Road salts deposited as snow melts from vehicles or chlorides and moisture contained in ambient air penetrate the concrete surface. The dissolved chlorides and moisture then migrate to the imbedded reinforcing steel through pores in the concrete or directly through cracks. Once they reach the steel, salts and moisture cause expansive corrosion, ultimately causing the concrete to expand and “pop” or spall. Left unrepaired, additional chlorides and moisture will continue to infiltrate the concrete, eventually causing structural failure. This type of deterioration is progressive and costly to repair. The utilization of a traffic coating atop the concrete minimizes the infiltration of salts and moisture into the concrete thereby minimizing future capital repairs.

Traffic coating replacement methods are dependent on the type of existing and proposed coating. While the traffic coating industry is constantly developing new materials, we identify three common types of traffic coatings for application to existing structures:

Penetrating Sealers - These liquid applied treatments penetrate the concrete to limit the amount of chlorides that reach the reinforcing steel. These coatings are vapor permeable which makes them a popular choice for concrete slabs on grade. Penetrating sealers are relatively inexpensive and quickly applied. Unfortunately, these sealers do not bridge cracks and have a limited useful life.

Acrylic and Epoxy Sealers - These sealers bridge passive cracks and seal pores in the concrete to minimize chloride intrusion. They limit vapor transmission so they should not be applied to concrete on grade or in other areas that could be susceptible to trapped moisture. These rigid sealers do not work well on active cracks or on surfaces that experience moderate or high thermal or mechanical expansive or contractive forces. Epoxies degrade quickly under ultraviolet (UV) radiation which makes them undesirable for exposed upper decks. Conversely, acrylics should not be applied in enclosed areas due to noxious fumes released during installation. Regardless of these factors, their moderate cost makes them an attractive option in many cases.

Elastomeric and Urethane Coatings - These coatings do not penetrate the surface of the concrete but remain on the surface to create a barrier that locks out moisture and chlorides. Most of these coatings have two or more layers that bridge cracks and provide a safe non-skid surface. These coatings tend to be more expensive and labor intensive to install, requiring a significant amount of down time. Once one of these coatings has been installed, the coating must be maintained or replaced as failure can trap moisture and chlorides in the concrete, having a negative effect on the useful life of the structure. Replacement of elastomeric and urethane coatings requires the removal of the existing coating (where applicable) through mechanical abrading, and then the installation of a new base coat, aggregate intermediate coat and top coat.

Failure to maintain a traffic coating on elevated floors will result in acceleration of concrete deterioration at concrete ceilings below the elevated floors and a higher overall capital investment in the parking structure over time. Therefore, we recommend Granville Beach budget for the following activities by 2019 and every 10 years thereafter at the 2nd floor, and by 2019 and every 15 years thereafter at the 1st floor:

- Complete inspection of the garage concrete and concrete repairs as described in the previous narratives “**Concrete, On-grade**” and “**Concrete, Elevated Floors**”
- Removal of the existing membrane and preparation of the concrete surface



- Application of a urethane base coat, intermediate aggregate membrane and top coat to the elevated floors
- Parking and directional line striping as needed

We depict this information on Line Items 7.799 and 7.800 of *Reserve Expenditures*. The Association should allow ample time to conduct a phased membrane installation over a few weeks, during which, parking in the affected areas will not be permitted. Granville Beach should fund interim applications in high traffic areas through the operating budget.

Again, maintenance of the coating is critical to maximize its useful life and to minimize future capital repairs to the concrete. Our costs and times of coating replacements assume the Association will maintain the membrane according to the manufacturer's recommendations. The Association should conduct partial, interim coating applications or patching as needed, especially at high traffic areas, garage entrances and ramps. Granville Beach should fund these interim repairs as normal operating maintenance.

Unit Heaters - Unit heaters, or air handling units, provide heat to the garage during the winter months. The Association will modify and/or install additional unit heaters in the near term as noted in the Line Item "**Boiler System Project**".



Garage unit heater

The unit heaters are likely original. The useful life of large capacity unit heaters is up to 30 years. Based on the age and condition of the unit heaters, we recommend the Association budget for complete replacement of all unit heaters by 2020 concurrent with the boiler system project. We note this information on Line Item 7.900 of *Reserve Expenditures*.

Reserve Study Update

An ongoing review by the Board and an Update of this Reserve Study in two- to three-years are necessary to ensure an equitable funding plan since a Reserve Study is a snapshot in time. Many variables change after the study is conducted that may result in significant overfunding or underfunding the reserve account. Variables that may affect the Reserve Funding Plan include, but are not limited to:

- Deferred or accelerated capital projects based on Board discretion
- Changes in the interest rates on reserve investments
- Changes in the *local* construction inflation rate
- Additions and deletions to the Reserve Component Inventory
- The presence or absence of maintenance programs
- Unusually mild or extreme weather conditions
- Technological advancements

Periodic updates incorporate these variable changes since the last Reserve Study or Update.



The Association can expense the fee for an Update with site visit from the reserve account. This fee is included in the Reserve Funding Plan. We base this budgetary amount on updating the same property components and quantities of this Reserve Study report. Budgeting for an Update demonstrates the Board's objective to continue fulfilling its fiduciary responsibility to maintain the commonly owned property and to fund reserves appropriately.



5. METHODOLOGY

Reserves for replacement are the amounts of money required for future expenditures to repair or replace Reserve Components that wear out before the entire facility or project wears out. Reserving funds for future repair or replacement of the Reserve Components is also one of the most reliable ways of protecting the value of the property's infrastructure and marketability.

Granville Beach can fund capital repairs and replacements in any combination of the following:

1. Increases in the operating budget during years when the shortages occur
2. Loans using borrowed capital for major replacement projects
3. Level monthly reserve assessments annually adjusted upward for inflation to increase reserves to fund the expected major future expenditures
4. Special assessments

We do not advocate special assessments or loans unless near term circumstances dictate otherwise. Although loans provide a gradual method of funding a replacement, the costs are higher than if the Association were to accumulate reserves ahead of the actual replacement. Interest earnings on reserves also accumulate in this process of saving or reserving for future replacements, thereby defraying the amount of gradual reserve collections. We advocate the third method of *Level Monthly Reserve Assessments* with relatively minor annual adjustments. The method ensures that Homeowners pay their "fair share" of the weathering and aging of the commonly owned property each year. Level reserve assessments preserve the property and enhance the resale value of the homes.

This Reserve Study is in compliance with and exceeds the National standards¹ set forth by the Community Associations Institute (CAI) and the Association of Professional Reserve Analysts (APRA) fulfilling the requirements of a "Full Reserve Study." These standards require a Reserve Component to have a "predictable remaining Useful Life." Estimating Remaining Useful Lives and Reserve Expenditures beyond 30 years is often indeterminate. Long-Lived Property Elements are necessarily excluded from this analysis. We considered the following factors in our analysis:

¹ Identified in the APRA "Standards - Terms and Definitions" and the CAI "Terms and Definitions".



Information Furnished by the Association	
2016 unaudited Cash Status of the Reserve Fund	539,343
2016 Remaining Budgeted Reserve Contribution	116,196
Larson Transfer to Reserves	6,000
Anticipated Interest on Reserve Fund	5,039
Less Anticipated Reserve Expenditures	(205,475)
Projected 2016 Year-End Reserve Balance	\$461,103

The Cash Flow Method to compute, project and illustrate the 30-year Reserve Funding Plan

Local² costs of material, equipment and labor

Current and future costs of replacement for the Reserve Components

Costs of demolition as part of the cost of replacement

Local economic conditions and a historical perspective to arrive at our estimate of long term future inflation for construction costs in Chicago, Illinois at an annual inflation rate of 2.4%. Isolated or regional markets of greater construction (development) activity may experience slightly greater rates of inflation for both construction materials and labor.

The past and current maintenance practices of Granville Beach and their effects on remaining useful lives

The Funding Plan excludes necessary operating budget expenditures. It is our understanding that future operating budgets will provide for the ongoing normal maintenance of Reserve Components.

The anticipated effects of appreciation of the reserves over time in accord with an anticipated future return or yield on investment of your cash equivalent assets at an annual rate of 1.35% (We did not consider the costs, if any, of Federal and State Taxes on income derived from interest and/or dividend income).

Interest rates on reserves are steady or increasing in concert with the certificates of deposit and money market rates. Slight increases exist in the savings rates of one, two or three-year CDs. Without significant differences in these savings rates, shorter term investments are the choice of many investors. We recommend consultation with a professional investment adviser before investing reserves to

² See Credentials for addition information on our use of published sources of cost data.



determine an appropriate investment strategy to maximize a safe return on reserve savings. The following table summarizes rates of inflation and key rates for government securities, generally considered as safe investment alternatives.

Interest Rate and Inflation Data	2015				2016			
	<u>2015:1 (A)</u>	<u>2015:2 (A)</u>	<u>2015:3 (A)</u>	<u>2015:4 (A)</u>	<u>2016:1 (A)</u>	<u>2016:2 (E)</u>	<u>2016:3 (E)</u>	<u>2016:4 (E)</u>
Average or Last Actual = (A)								
1-Year Treasury Bill	0.25%	0.27%	0.30%	0.65%	0.60%	55.00%	60.00%	65.00%
10-Year Treasury Note	1.90%	2.50%	2.70%	2.25%	1.80%	1.80%	1.85%	1.90%
30-Year Treasury Bond	2.55%	3.20%	3.40%	3.00%	2.65%	2.60%	2.60%	2.65%
Consumer Price Index (annualized rate)	0.00%	0.00%	0.00%	0.00%	0.10%	0.00%	0.00%	0.00%
Although past indicators are not predictive of future inflation in "building" construction, minimal inflation exists for past 2 years April, 2014 to April 2016 of 1% to 2.5%.								
Savings Rates Results RANGE as found in http://www.bankrate.com	0.02 to 1.11%		Money Market Savings		0.15 to 1.45%		for 2-Year Certificate of Deposit	
	0.1 to 1.25%		1-Year Certificate of Deposit		0.15 to 1.50%		for 3-Year Certificate of Deposit	
Estimated Near Term Yield Rate for Reserve Savings					1.35%			
Est. Near Term Local Inflation Rate for Future Capital Expenditures					2.4%			
					05/05/2016			

Updates to this Reserve Study will continue to monitor historical facts and trends concerning the external market conditions.



6. DEFINITIONS

Definitions are derived from the standards set forth by the Community Associations Institute (CAI) representing America's 305,000 condominium and homeowners associations and cooperatives, and the Association of Professional Reserve Analysts, setting the standards of care for reserve study practitioners

Cash Flow Method - A method of calculating Reserve Contributions where contributions to the reserve fund are designed to offset the variable annual expenditures from the reserve fund. Different Reserve Funding Plans are tested against the anticipated schedule of reserve expenses until the desired funding goal is achieved.

Component Method - A method of developing a Reserve Funding Plan with the total contribution is based on the sum of the contributions for individual components.

Current Cost of Replacement - That amount required today derived from the quantity of a *Reserve Component* and its unit cost to replace or repair a Reserve Component using the most current technology and construction materials, duplicating the productive utility of the existing property at current *local* market prices for *materials, labor* and manufactured equipment, contractors' overhead, profit and fees, but without provisions for building permits, overtime, bonuses for labor or premiums for material and equipment. We include removal and disposal costs where applicable.

Fully Funded Balance - The Reserve balance that is in direct proportion to the fraction of life "used up" of the current Repair or Replacement cost similar to Total Accrued Depreciation.

Funding Goal (Threshold) - The stated purpose of this Reserve Study is to determine the adequate, not excessive, minimal threshold reserve balances.

Future Cost of Replacement - *Reserve Expenditure* derived from the inflated current cost of replacement or current cost of replacement as defined above, with consideration given to the effects of inflation on local market rates for materials, labor and equipment.

Long-Lived Property Component - Property component of Granville Beach responsibility not likely to require capital repair or replacement during the next 30 years with an unpredictable remaining Useful Life beyond the next 30 years.

Percent Funded - The ratio, at a particular point of time (typically the beginning of the Fiscal Year), of the actual (or projected) Reserve Balance to the Fully Funded Balance, expressed as a percentage.

Remaining Useful Life - The estimated remaining functional or useful time in years of a *Reserve Component* based on its age, condition and maintenance.

Reserve Component - Property elements with: 1) Granville Beach responsibility; 2) limited Useful Life expectancies; 3) predictable Remaining Useful Life expectancies; and 4) a replacement cost above a minimum threshold.

Reserve Component Inventory - Line Items in *Reserve Expenditures* that identify a *Reserve Component*.

Reserve Contribution - An amount of money set aside or *Reserve Assessment* contributed to a *Reserve Fund* for future *Reserve Expenditures* to repair or replace *Reserve Components*.

Reserve Expenditure - Future Cost of Replacement of a Reserve Component.

Reserve Fund Status - The accumulated amount of reserves in dollars at a given point in time, i.e., at year end.

Reserve Funding Plan - The portion of the Reserve Study identifying the *Cash Flow Analysis* and containing the recommended Reserve Contributions and projected annual expenditures, interest earned and reserve balances.

Reserve Study - A budget planning tool that identifies the current status of the reserve fund and a stable and equitable Funding Plan to offset the anticipated future major common area expenditures.

Useful Life - The anticipated total time in years that a *Reserve Component* is expected to serve its intended function in its present application or installation.



7. PROFESSIONAL SERVICE CONDITIONS

Our Services - Reserve Advisors, Inc. will perform its services as an independent contractor in accordance with our professional practice standards. Our compensation is not contingent upon our conclusions.

Our inspection and analysis of the subject property is limited to visual observations and is noninvasive. We will inspect sloped roofs from the ground. We will inspect flat roofs where safe access (stairs or ladder permanently attached to the structure) is available. The report is based upon a “snapshot in time” at the moment of our observation. Conditions can change between the time of inspection and the issuance of the report. Reserve Advisors does not investigate, nor assume any responsibility for any existence or impact of any hazardous materials, structural, latent or hidden defects which may or may not be present on or within the property. Our opinions of estimated costs and remaining useful lives are not a guarantee of the actual costs of replacement, a warranty of the common elements or other property elements, or a guarantee of remaining useful lives.

We assume, without independent verification, the accuracy of all data provided to us. You agree to indemnify and hold us harmless against and from any and all losses, claims, actions, damages, expenses or liabilities, including reasonable attorneys' fees, to which we may become subject in connection with this engagement, because of any false, misleading or incomplete information which we have relied upon as supplied by you or others under your direction, or which may result from any improper use or reliance on the report by you or third parties under your control or direction. Your obligation for indemnification and reimbursement shall extend to any controlling person of Reserve Advisors, Inc., including any director, officer, employee, affiliate, or agent. Liability of Reserve Advisors, Inc. and its employees, affiliates, and agents for errors and omissions, if any, in this work is limited to the amount of its compensation for the work performed in this engagement.

Report - Reserve Advisors, Inc. will complete the services in accordance with the Proposal. The Report represents a valid opinion of our findings and recommendations and is deemed complete. However, we will consider any additional information made available to us in the interest of promptly issuing a Revised Report if changes are requested within six months of receiving the Report. We retain the right to withhold a Revised Report if payment for services is not rendered in a timely manner. All files, work papers or documents developed by us during the course of the engagement remains our property.

Your Obligations - You agree to provide us access to the subject property during our on-site visual inspection and tour. You will provide to us to the best of your ability and if reasonably available, historical and budgetary information, the governing documents, and other information that we request and deem necessary to complete our Study. You agree to pay our actual attorneys' fees and any other costs incurred in the event we have to initiate litigation to collect on any unpaid balance for our services.

Use of Our Report and Your Name - Use of this Report is limited to only the purpose stated herein. Any use or reliance for any other purpose, by you or third parties, is invalid. Our Reserve Study Report in whole or part is not and cannot be used as a design specification, design engineering services or an appraisal. You may show our report in its entirety to those third parties who need to review the information contained herein. The Client and other third parties viewing this report should not reference our name or our report, in whole or in part, in any document prepared and/or distributed to third parties without our written consent. *This report contains intellectual property developed by Reserve Advisors, Inc. specific to this engagement and cannot be reproduced or distributed to those who conduct reserve studies without the written consent of Reserve Advisors, Inc.*



We reserve the right to include our client's name in our client lists, but we will maintain the confidentiality of all conversations, documents provided to us, and the contents of our reports, subject to legal or administrative process or proceedings. These conditions can only be modified by written documents executed by both parties.

Payment Terms, Due Dates and Interest Charges - The retainer payment is due upon authorization and prior to shipment of the report. The final payment of the fee is due immediately upon receipt of the Report. Subsequent changes to the report can be made for up to six months from the initial report date. Any outstanding balance after 30 days of the invoice date is subject to an interest charge of 1.5% per month. Any litigation necessary to collect an unpaid balance shall be venued in Milwaukee County Circuit Court in the State of Wisconsin.

CONDITIONS OF OUR SERVICE ASSUMPTIONS

To the best of our knowledge, all data set forth in this report are true and accurate. Although gathered from reliable sources, we make no guarantee nor assume liability for the accuracy of any data, opinions, or estimates identified as furnished by others that we used in formulating this analysis.

We did not make any soil analysis or geological study with this report; nor were any water, oil, gas, coal, or other subsurface mineral and use rights or conditions investigated.

Substances such as asbestos, urea-formaldehyde foam insulation, other chemicals, toxic wastes, environmental mold or other potentially hazardous materials could, if present, adversely affect the validity of this study. Unless otherwise stated in this report, the existence of hazardous substance, that may or may not be present on or in the property, was not considered. Our opinions are predicated on the assumption that there are no hazardous materials on or in the property. We assume no responsibility for any such conditions. We are not qualified to detect such substances, quantify the impact, or develop the remedial cost.

We have made a visual inspection of the property and noted visible physical defects, if any, in our report. Our inspection and analysis was made by employees generally familiar with real estate and building construction; however, we did not do any invasive testing. Accordingly, we do not opine on, nor are we responsible for, the structural integrity of the property including its conformity to specific governmental code requirements, such as fire, building and safety, earthquake, and occupancy, or any physical defects that were not readily apparent during the inspection.

Our opinions of the remaining useful lives of the property elements do not represent a guarantee or warranty of performance of the products, materials and workmanship.



8. CREDENTIALS

HISTORY AND DEPTH OF SERVICE

Founded in 1991, Reserve Advisors, Inc. is the leading provider of reserve studies, insurance appraisals, developer turnover transition studies, expert witness services, and other engineering consulting services. Clients include community associations, resort properties, hotels, clubs, non-profit organizations, apartment building owners, religious and educational institutions, and office/commercial building owners in 48 states, Canada and throughout the world.

The **architectural engineering consulting firm** was formed to take a leadership role in helping fiduciaries, boards, and property managers manage their property like a business with a long range master plan known as a Reserve Study.

Reserve Advisors employs the **largest staff of Reserve Specialists** with bachelor's degrees in engineering dedicated to Reserve Study services. Our principals are founders of Community Associations Institute's (CAI) Reserve Committee that developed national standards for reserve study providers. One of our principals is a Past President of the Association of Professional Reserve Analysts (APRA). Our vast experience with a variety of building types and ages, on-site examination and historical analyses are keys to determining accurate remaining useful life estimates of building components.

No Conflict of Interest - As consulting specialists, our **independent opinion** eliminates any real or perceived conflict of interest because we do not conduct or manage capital projects.

TOTAL STAFF INVOLVEMENT

Several staff members participate in each assignment. The responsible advisor involves the staff through a Team Review, exclusive to Reserve Advisors, and by utilizing the experience of other staff members, each of whom has served hundreds of clients. We conduct Team Reviews, an internal quality assurance review of each assignment, including: the inspection; building component costing; lifing; and technical report phases of the assignment. Each Team Review requires the attendance of several engineers, a Review Coordinator, Director of Quality Assurance and other participatory peers. Due to our extensive experience with building components, we do not have a need to utilize subcontractors.

OUR GOAL

To help our clients fulfill their fiduciary responsibilities to maintain property in good condition.

VAST EXPERIENCE WITH A VARIETY OF BUILDINGS

Reserve Advisors has conducted reserve studies for a multitude of different communities and building types. We've analyzed thousands of buildings, from as small as a 3,500-square foot day care center to the 2,600,000-square foot 98-story Trump International Hotel and Tower in Chicago. We also routinely inspect buildings with various types of mechanical systems such as simple electric heat, to complex systems with air handlers, chillers, boilers, elevators, and life safety and security systems.

We're familiar with all types of building exteriors as well. Our well versed staff regularly identifies optimal repair and replacement solutions for such building exterior surfaces such as adobe, brick, stone, concrete, stucco, EIFS, wood products, stained glass and aluminum siding, and window wall systems.

OLD TO NEW

Reserve Advisors experience includes ornate and vintage buildings as well as modern structures. Our specialists are no strangers to older buildings. We're accustomed to addressing the unique challenges posed by buildings that date to the 1800's. We recognize and consider the methods of construction employed into our analysis. We recommend appropriate replacement programs that apply cost effective technologies while maintaining a building's character and appeal.

QUALIFICATIONS
THEODORE J. SALGADO
Principal Owner

CURRENT CLIENT SERVICES

Theodore J. Salgado is a co-founder of Reserve Advisors, Inc., which is dedicated to serving community associations, city and country clubs, religious organizations, educational facilities, and public and private entities throughout the United States. He is responsible for the production, management, review, and quality assurance of all reserve studies, property inspection services and consulting services for a nationwide portfolio of more than 6,000 clients. Under his direction, the firm conducts reserve study services for community associations, apartment complexes, churches, hotels, resorts, office towers and vintage architecturally ornate buildings.



PRIOR RELEVANT EXPERIENCE

Before founding Reserve Advisors, Inc. with John P. Poehlmann in 1991, Mr. Salgado, a professional engineer registered in the State of Wisconsin, served clients for over 15 years through American Appraisal Associates, the world's largest full service valuation firm. Mr. Salgado conducted facilities analyses of hospitals, steel mills and various other large manufacturing and petrochemical facilities and casinos.

He has served clients throughout the United States and in foreign countries, and frequently acted as project manager on complex valuation, and federal and state tax planning assignments. His valuation studies led to negotiated settlements on property tax disputes between municipalities and property owners.

Mr. Salgado has authored articles on the topic of reserve studies and facilities maintenance. He also co-authored *Reserves*, an educational videotape produced by Reserve Advisors on the subject of Reserve Studies and maintaining appropriate reserves. Mr. Salgado has also written in-house computer applications manuals and taught techniques relating to valuation studies.

EXPERT WITNESS

Mr. Salgado has testified successfully before the Butler County Board of Tax Revisions in Ohio. His depositions in pretrial discovery proceedings relating to reserve studies of Crestview Estates Condominium Association in Wauconda, Illinois, Rivers Point Row Property Owners Association, Inc. in Charleston, South Carolina and the North Shore Club Associations in South Bend, Indiana have successfully assisted the parties in arriving at out of court settlements.

EDUCATION - Milwaukee School of Engineering - B.S. Architectural Engineering

PROFESSIONAL AFFILIATIONS/DESIGNATIONS

American Association of Cost Engineers - Past President, Wisconsin Section
Association of Construction Inspectors - Certified Construction Inspector
Association of Professional Reserve Analysts - Past President & Professional Reserve Analyst (PRA)
Community Associations Institute - Member and Volunteer Leader of multiple chapters
Concordia Seminary, St. Louis - Member, National Steering Committee
Milwaukee School of Engineering - Member, Corporation Board
Professional Engineer, Wisconsin (1982) and North Carolina (2014)

Ted continually maintains his professional skills through American Society of Civil Engineers, ASHRAE, Association of Construction Inspectors, and continuing education to maintain his professional engineer licenses.



JOHN P. POEHLMANN, RS
Principal

John P. Poehlmann is a co-founder of Reserve Advisors, Inc. He is responsible for the finance, accounting, marketing, and overall administration of Reserve Advisors, Inc. He also regularly participates in internal Quality Control Team Reviews of Reserve Study reports.



Mr. Poehlmann directs corporate marketing, including business development, advertising, press releases, conference and trade show exhibiting, and electronic marketing campaigns. He frequently speaks throughout the country at seminars and workshops on the benefits of future planning and budgeting for capital repairs and replacements of building components and other assets.

PRIOR RELEVANT EXPERIENCE

Mr. Poehlmann served on the national Board of Trustees of Community Associations Institute. An international organization, Community Associations Institute (CAI) is a nonprofit 501(c)(3) trade association created in 1973 to provide education and resources to America's 335,000 residential condominium, cooperative and homeowner associations and related professionals and service providers.

He is a founding member of the Institute's Reserve Committee. The Reserve Committee developed national standards and the Reserve Specialist (RS) Designation Program for Reserve Study providers. Mr. Poehlmann has authored numerous articles on the topic of Reserve Studies, including Reserve Studies for the First Time Buyer, Minimizing Board Liability, Sound Association Planning Parallels Business Concepts, and Why Have a Professional Reserve Study. He is also a contributing author in Condo/HOA Primer, a book published for the purpose of sharing a wide background of industry knowledge to help boards in making informed decisions about their communities.

INDUSTRY SERVICE AWARDS

- CAI Wisconsin Chapter Award
- CAI National Rising Star Award
- CAI Michigan Chapter Award

EDUCATION

- University of Wisconsin-Milwaukee - Master of Science Management
- University of Wisconsin - Bachelor of Business Administration

PROFESSIONAL AFFILIATIONS

- Community Associations Institute (CAI)** - Founding member of Reserve Committee; former member of National Board of Trustees; Reserve Specialist (RS) designation; Member of multiple chapters
- Association of Condominium, Townhouse, & Homeowners Associations (ACTHA)** – member



ALAN M. EBERT, P.E., PRA, RS
Director of Quality Assurance

CURRENT CLIENT SERVICES

Alan M. Ebert, a Professional Engineer, is Director of Quality Assurance for Reserve Advisors. Mr. Ebert is responsible for the management, review and quality assurance of reserve studies. In this role, he assumes the responsibility of stringent report review analysis to assure report accuracy and the best solution for Reserve Advisors' clients.

Mr. Ebert has been involved with hundreds of Reserve Study assignments. The following is a partial list of clients served by Alan Ebert demonstrating his breadth of experiential knowledge of community associations in construction and related buildings systems.

Brownsville Winter Haven Located in Brownsville, Texas, this unique homeowners association contains 525 units. The Association maintains three pools and pool houses, a community and management office, landscape and maintenance equipment, and nine irrigation canals with associated infrastructure.

Rosemont Condominiums This unique condominium is located in Alexandria, Virginia and dates to the 1940's. The two mid-rise buildings utilize decorative stone and brick masonry. The development features common interior spaces, multi-level wood balconies and common asphalt parking areas.

Stillwater Homeowners Association Located in Naperville, Illinois, Stillwater Homeowners Association maintains four tennis courts, an Olympic sized pool and an upscale ballroom with commercial-grade kitchen. The community also maintains three storm water retention ponds and a detention basin.

Birchfield Community Services Association This extensive Association comprises seven separate parcels which include 505 townhome and single family homes. This Community Services Association is located in Mt. Laurel, New Jersey. Three lakes, a pool, a clubhouse and management office, wood carports, aluminum siding, and asphalt shingle roofs are a few of the elements maintained by the Association.

Oakridge Manor Condominium Association Located in Londonderry, New Hampshire, this Association includes 104 units at 13 buildings. In addition to extensive roads and parking areas, the Association maintains a large septic system and significant concrete retaining walls.

Memorial Lofts Homeowners Association This upscale high rise is located in Houston, Texas. The 20 luxury units include large balconies and decorative interior hallways. The 10-story building utilizes a painted stucco facade and TPO roof, while an on-grade garage serves residents and guests.

PRIOR RELEVANT EXPERIENCE

Mr. Ebert earned his Bachelor of Science degree in Geological Engineering from the University of Wisconsin-Madison. His relevant course work includes foundations, retaining walls, and slope stability. Before joining Reserve Advisors, Mr. Ebert was an oilfield engineer and tested and evaluated hundreds of oil and gas wells throughout North America.

EDUCATION

University of Wisconsin-Madison - B.S. Geological Engineering

PROFESSIONAL AFFILIATIONS/DESIGNATIONS

Professional Engineering License - Wisconsin, North Carolina

Reserve Specialist (RS) - Community Associations Institute

Professional Reserve Analyst (PRA) - Association of Professional Reserve Analysts



TODD M. WALTER, P.E., RS, PRA
Director of Production Management

CURRENT CLIENT SERVICES

Todd M. Walter, a Professional Engineer (P.E.) in Civil Engineering, is a Director for Reserve Advisors, which is dedicated to serving community associations, religious organizations, educational facilities, and public and private entities throughout the United States. Mr. Walter is responsible for the inspection and analysis of the property's current condition, recommending engineering solutions to prolong the lives of building components, forecasting capital expenditures for the repair and/or replacement of the property components, and technical report preparation on assignments. Todd Walter frequently serves as the Quality Assurance Review Coordinator for all types of developments.

Todd Walter has conducted nearly 1,300 Reserve Studies, primarily in the Chicago area. The following is a partial list of clients served by Mr. Walter demonstrating his breadth of experiential knowledge of community associations in construction and related buildings systems.

Trump International Hotel and Tower Premier luxury high rise development in Chicago. The 90+ story development includes an extensive vaulted plaza/viaduct and stainless steel curtain wall system

The Elysian Private Residences Upscale 52-story development near Chicago's Magnificent Mile.

One Museum Park East Modern 64-story curtain wall tower with numerous amenities overlooking the museum campus in Chicago.

Commodore Green Brier Landmark Elegant, historic condominiums with original face brick, terra cotta and stone architecture in Chicago.

Montgomery on Superior Conversion of the former Montgomery Ward headquarters in Chicago into upscale residences. The tower includes travertine stone cladding and curtain wall systems.

The Carlyle Vintage, prime real estate on Chicago's Lake Shore Drive at the north end of the Magnificent Mile.

Clinton Complex This development includes several former manufacturing structures built in the 1800's and converted to condominiums in Chicago

3550 Association Twin 28-story towers with over 700 units on Lake Shore Drive in Chicago. Extensive lobbies and garage structure at the base of the towers.

Loring Green East and West These two towers are two of the most recognized residential high rises in Minneapolis. The towers comprise entirely brick masonry facades with extensive amenities. The development includes a landscaped plaza roof system.

Galleria Residences High rise luxury condominiums constructed above a Westin Hotel near Minneapolis.

PRIOR RELEVANT EXPERIENCE

Before joining Reserve Advisors, Mr. Walter was a Civil Engineer and on-site project manager for Owens-Illinois. He was responsible for the construction inspection of structural projects throughout the United States. He has designed structural components and prepared construction specifications for national and international engineering projects.

EDUCATION

Ohio University - B.S. Civil Engineering

PROFESSIONAL AFFILIATIONS

Professional Engineering License - Wisconsin 2003, Illinois 2003, Ohio 2009, Michigan 2009, Indiana 2009, Minnesota 2009

LEED (Leadership in Energy and Environmental Design) Green Associate

American Society of Civil Engineers

Reserve Specialist (RS) - Community Associations Institute

Professional Reserve Analyst (PRA) - Association of Professional Reserve Analysts



KEARY D. WASS, E.I.T., RS
Review Coordinator

CURRENT CLIENT SERVICES

Keary D. Wass, a Civil Engineer, is an Advisor for Reserve Advisors. Mr. Wass is responsible for the inspection and analysis of the condition of clients' property, and recommending engineering solutions to prolong the lives of the components. He also forecasts capital expenditures for the repair and/or replacement of the property components and prepares technical reports on assignments. He is responsible for conducting Life Cycle Cost Analysis and Capital Replacement Forecast services and the preparation of Reserve Study Reports for apartments, high rises, condominiums, townhomes and homeowners associations. Mr. Wass frequently serves as the Quality Assurance Review Coordinator for all types of developments.

The following is a partial list of clients served by Keary Wass demonstrating his breadth of experiential knowledge of community associations in construction and related buildings systems.

Frisco Stonewater Crossing Homeowners Association is a 243 unit homeowners association located in Frisco, Texas. This development boasts an impressive in-ground pool, pool house and large playground. It also has two ponds surrounded by decorative concrete retaining walls.

River North Commons Condominium Association Located in downtown Chicago the association includes 198 units in two seven-story mid-rise buildings. This secured community is comprised of high end finishes, ramp and underground parking, fitness area and a party room.

Cherry Hills Country Club Situated just outside of Denver in Englewood, Colorado, this private Country Club provides a scenic view of the Rockies.. The Country Club amenities include a recently expanded clubhouse with three kitchens, 18-hole golf course, driving range, and a pool and tennis building.

Camp For All Located in Texas between Houston and Austin, this campground specializes in programs designed for children and adults with special needs. The campground includes group and private lodging, a clubhouse, a pool, basketball area and baseball field, climbing walls and zip lines, a church, a large and small animal ranch, and an art center.

Southdown Village Community Association is a large planned unit development located in Houston, Texas. The Association consists of 954 single family homes and includes a pool and pool house, fencing, and two parks with large playgrounds.

Watermark Place Condominiums is a 12-story high-rise located in Columbia, Maryland. This high-rise includes a secured entrance, pool area and fitness center, and a multi-story parking structure.

Kenbrook Hills Unit Owners' Association is a 30-unit, five-building community located in Columbus, Ohio. It is a comfortable development constructed amongst mature trees with creeks surrounding three sides of the property. This property features unique walkout style units.

PRIOR RELEVANT EXPERIENCE

Before joining Reserve Advisors, Mr. Wass worked as a civil engineer for a construction engineering firm specializing in the repair and construction of underground structures. He was responsible for soil condition analysis, inspection of existing structures, repair and new construction design, and construction oversight of a variety of municipal and private engineering projects. Mr. Wass attended the University of Minnesota in Minneapolis, Minnesota where he attained his Bachelor of Science degree in Civil Engineering. At the University of Minnesota, Mr. Wass performed undergraduate research in the field of non-destructive testing of rigid pavements.

EDUCATION

University of Minnesota - B.S. Civil Engineering

PROFESSIONAL AFFILIATIONS

Engineer in Training (E.I.T.) MN - Minnesota Board of Architecture, Engineering, Land Surveying
Landscape Architecture, Geoscience and Interior Design (AELSLAGID)
Reserve Specialist (RS) - Community Associations Institute



RESOURCES

Reserve Advisors, Inc. utilizes numerous resources of national and local data to conduct its Professional Services. A concise list of several of these resources follows:

Association of Construction Inspectors, (ACI) the largest professional organization for those involved in construction inspection and construction project management. ACI is also the leading association providing standards, guidelines, regulations, education, training, and professional recognition in a field that has quickly become important procedure for both residential and commercial construction, found on the web at www.iami.org. Several advisors and a Principal of Reserve Advisors, Inc. hold Senior Memberships with ACI.

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., (ASHRAE) the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., devoted to the arts and sciences of heating, ventilation, air conditioning and refrigeration; recognized as the foremost, authoritative, timely and responsive source of technical and educational information, standards and guidelines, found on the web at www.ashrae.org. Reserve Advisors, Inc. actively participates in its local chapter and holds individual memberships.

Community Associations Institute, (CAI) America's leading advocate for responsible communities noted as the only national organization dedicated to fostering vibrant, responsive, competent community associations. Their mission is to assist community associations in promoting harmony, community, and responsible leadership.

Marshall & Swift / Boeckh, (MS/B) the worldwide provider of building cost data, co-sourcing solutions, and estimating technology for the property and casualty insurance industry found on the web at www.marshallswift.com.

R.S. Means CostWorks, North America's leading supplier of construction cost information. As a member of the Construction Market Data Group, Means provides accurate and up-to-date cost information that helps owners, developers, architects, engineers, contractors and others to carefully and precisely project and control the cost of both new building construction and renovation projects found on the web at www.rsmeans.com.

Reserve Advisors, Inc., library of numerous periodicals relating to reserve studies, condition analyses, chapter community associations, and historical costs from thousands of capital repair and replacement projects, and product literature from manufacturers of building products and building systems.

Reserve Study Update

June 27, 2016

The Reserve Study for Granville Beach Condominium Association
Was submitted onJune 27, 2016

To maintain the most accurate and cost-effective replacement schedule and funding plan for your property elements, this study should be updated on or about**Second Quarter, 2018**
...but no later than.....**Second Quarter, 2019**

As a valued client, we are pleased to offer a future reserve study update with site visit for.....**\$6,800**

For a Reserve Study Update with Site visit as noted above.

This future update fee is based on the same property components that were contained in your last Reserve Advisors' reserve study or update. We are pleased to include property additions for an additional fee.

To initiate your Reserve Study Update, please sign this authorization and fax or mail to the number below. Upon receipt of this authorization we will contact you to schedule your site visit and invoice for the Reserve Study Update Service.

Sign this contract below and fax to **414-272-3663**. Or mail to
Reserve Advisors, Inc.
735 N. Water St., Suite 175
Milwaukee, WI 53202

Delivery options for your Reserve Study Update Report, Please check one of the following:

- 1-Full color printed copy PLUS Electronic Report, FREE
 2-Full color printed copies PLUS Electronic Report, \$100

For: Reserve Advisors, Inc.

Signature:  _____

Monica Mack
Director of Illinois Client Services
Monica@reserveadvisors.com
Ref. # 040516
(800) 221-9882

For Granville Beach Condominium Association

Name: _____

Title: _____

Date: _____

Phone: _____

Agent or Manager: Bryan McCarley

Management Firm: First Community Management