

**Revised**  
**FULL RESERVE STUDY**  
**Antigua**  
**Condominium**



**Ocean City, Maryland**  
**Inspected - May 21, 2020**  
**Revised - February 11, 2021**



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Long-term thinking. Everyday commitment.

Antigua Condominium  
Ocean City, Maryland

Dear Board of Directors of Antigua Condominium:

At the direction of the Board that recognizes the need for proper reserve planning, we have conducted a *Full Reserve Study* of Antigua Condominium in Ocean City, Maryland and submit our findings in this report. The effective date of this study is the date of our visual, noninvasive inspection, May 21, 2020.

This *Full Reserve Study* exceeds the Association of Professional Reserve Analysts (APRA) standards fulfilling the requirements of a "Level I Full Reserve Study."

An ongoing review by the Board and an Update of this Reserve Study are necessary to ensure an equitable funding plan since a Reserve Study is a snapshot in time. We recommend the Board budget for an Update to this Reserve Study in two- to three-years. We look forward to continuing to help Antigua Condominium plan for a successful future.

As part of our long-term thinking and everyday commitment to our clients, we are available to answer any questions you may have regarding this study.

Respectfully submitted on February 11, 2021 by

*Reserve Advisors, LLC*

Visual Inspection and Report by: Matthew D. Casey

Review by: Alan M. Ebert, RS<sup>1</sup>, PRA<sup>2</sup>, Director of Quality Assurance



<sup>1</sup> RS (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.

<sup>2</sup> PRA (Professional Reserve Analyst) is the professional designation of the Association of Professional Reserve Analysts. Learn more about APRA at <http://www.apra-usa.com>.



Long-term thinking. Everyday commitment.

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# 1. RESERVE STUDY EXECUTIVE SUMMARY

**Client:** Antigua Condominium (Antigua)

**Location:** Ocean City, Maryland

**Reference:** 192146

**Property Basics:** Antigua Condominium is a high-rise style development consisting of 104 units in one 13-story building. The building was built in 1977.

**Reserve Components Identified:** 37 Reserve Components.

**Inspection Date:** May 21, 2020.

**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 2028 and 2044 due to coating applications at the walkways and balconies.

**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
- 0.9% anticipated annual rate of return on invested reserves
- 2.0% 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:**

- \$240,000 projected by the Board as of January 1, 2021
- 2020 budgeted Reserve Contributions of \$157,045
- 2021 budgeted Reserve Contributions of \$151,394
- A potential deficit in reserves might occur by 2030 based upon continuation of the most recent annual reserve contribution of \$112,320 and the identified Reserve Expenditures.

**Project Prioritization:** We note anticipated Reserve Expenditures for the next 30 years in the **Reserve Expenditures** tables and include a **Five-Year Outlook** table following the **Reserve Funding Plan** in Section 3. We recommend the Association prioritize the following projects in the next five years based on the conditions identified:

- Replacement of the plaster and tile finishes at the pool
- Replacement of the modified bitumen roof
- Replacement of the pool mechanical equipment
- Replacement of the light poles and fixtures
- Replacement of the trash compactor

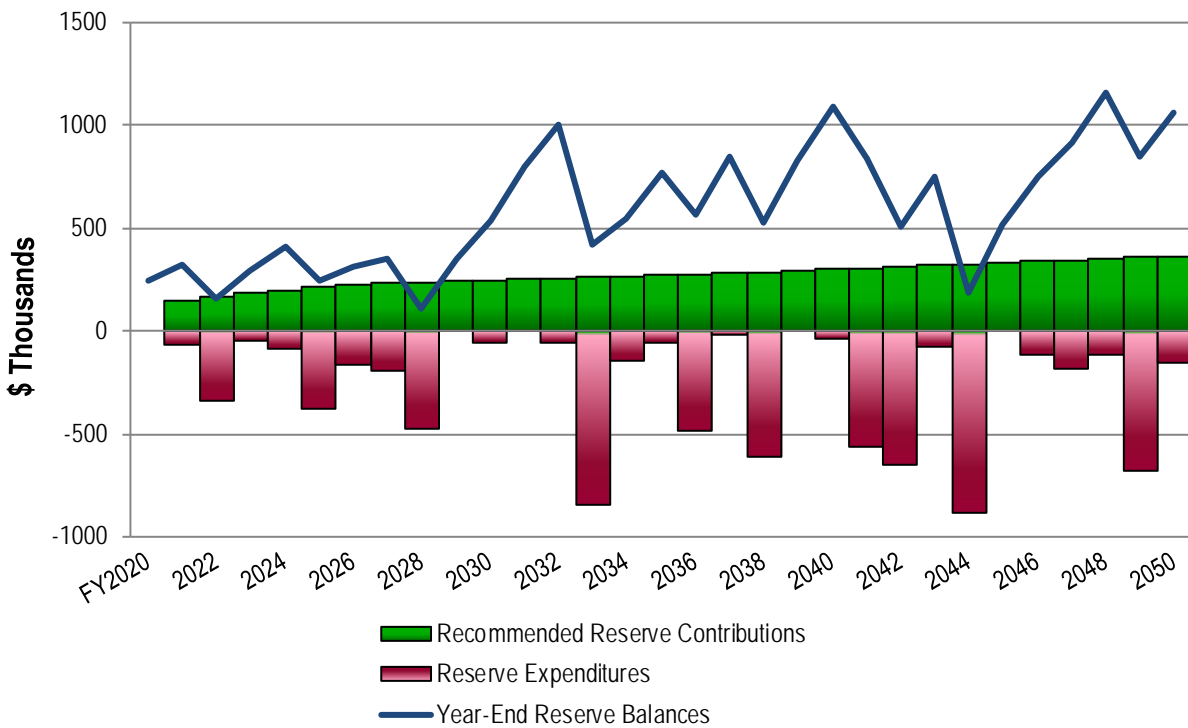
**Recommended Reserve Funding:** We recommend the following in order to achieve a stable and equitable Funding Plan:

- Phased increases of approximately \$15,000 from 2022 through 2026
- Inflationary increases through 2050, the limit of this study's Cash Flow Analysis

- Initial recommended adjustment in Reserve Contributions of \$15,006 represents an average monthly increase of \$12.02 per homeowner and about a three percent (2.6%) adjustment in the 2021 total Operating Budget of \$586,925.

**Antigua**  
Recommended Reserve Funding Table and Graph

Year	Reserve Contributions (\$)	Reserve Balances (\$)	Year	Reserve Contributions (\$)	Reserve Balances (\$)	Year	Reserve Contributions (\$)	Reserve Balances (\$)
2021	151,394	325,678	2031	249,900	794,084	2041	304,600	840,197
2022	166,400	156,868	2032	254,900	998,803	2042	310,700	501,921
2023	181,400	294,842	2033	260,000	419,135	2043	316,900	746,277
2024	196,400	408,883	2034	265,200	546,155	2044	323,200	186,805
2025	211,400	245,040	2035	270,500	766,682	2045	329,700	519,670
2026	226,400	311,993	2036	275,900	568,087	2046	336,300	747,510
2027	230,900	347,699	2037	281,400	841,801	2047	343,000	913,436
2028	235,500	106,611	2038	287,000	523,629	2048	349,900	1,153,334
2029	240,200	348,851	2039	292,700	822,359	2049	356,900	842,222
2030	245,000	538,216	2040	298,600	1,088,059	2050	364,000	1,058,597





## 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

**Antigua Condominium**

**Ocean City, Maryland**

and submit our findings in this report. The effective date of this study is the date of our visual, noninvasive inspection, May 21, 2020.

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
- **Five-Year Outlook** - Identifies reserve components and anticipated reserve expenditures during the first five years
- **Reserve Component Detail** - 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 to develop 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



Our investigation includes Reserve Components or property elements as set forth in your Declaration. The Expenditure tables in Section 3 list the elements contained in this study. 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:

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

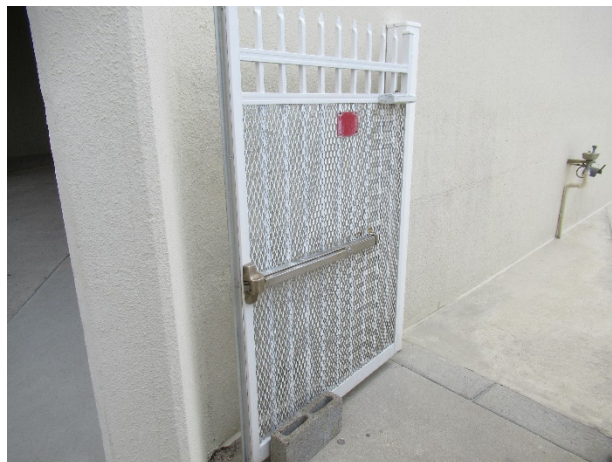
Long-Lived Property Elements may not have predictable Remaining Useful Lives or their replacement may occur beyond the 30-year scope of the study. The operating budget should fund infrequent repairs. Funding untimely or unexpected replacements

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.

- Electrical Systems, Common
- Foundation
- Geothermal System, Underground Loops (1996)
- Pipes, Risers, Geothermal System (2018)
- Pipes, Subsurface Utilities
- Structural Frame
- Valves, Large Diameter

The operating budget provides money for the repair and replacement of certain Reserve Components. The Association may develop independent criteria for use of operating and reserve funds. For purposes of calculating appropriate Reserve Contributions, we identify the following list of Operating Budget Funded Repairs and Replacements:

- General Maintenance to the Common Elements
- Expenditures less than \$5,000 (These relatively minor expenditures have a limited effect on the recommended Reserve Contributions.)
- Beach Area Including Sand Fences and Walkways
- Concrete Flatwork
- Duct Cleaning
- Exhaust Fans, Less than 5,000-CFM (cubic feet per minute)
- Expansion Tanks
- Fire Extinguishers
- Floor Coverings, Interior (Excluding Rest Room Tile)
- Gates



**Security gate at front of building**

- Landscape

- Light Fixtures, Interior
- Office, Finishes and Equipment
- Paint Finishes, Interior
- Paint Finishes, Touch Up
- Pipes, Common, Interim Repairs and Waste Rodding
- Pool Cover
- Pool Furniture
- Pumps Less Than Five-HP (horsepower)
- Roll-up Doors (We assume replacement on an as-needed basis.)



**Typical roll-up door**

- Staff, Storage and Service Areas
- Unit Heaters, Stairwells and Entrances
- Valves, Small Diameter (We assume replacement as needed in lieu of an aggregate replacement of all small diameter valves as a single event.)
- Wood Decks, Paint Finishes and Repairs
- 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:

- Electrical Systems (Including Circuit Protection Panels)
- HVAC Equipment, Geothermal System Air Handling Units
- Interiors
- Pipes (Within Units)
- Windows and Doors (Including Entrance Door Paint Finishes)

Certain items have been designated as the responsibility of others to repair or replace. Property Maintained by Others relates to:

- Cellular Network Equipment (Telecommunications Company (Tenant))



- Electrical Equipment Including Transformers and Main Service Room (Delmarva Power)
- Electrical Room Including Door and Operator (Delmarva Power)
- Light Poles and Fixtures (Delmarva Power)
- Street Systems Including Sidewalks and Subsurface Utilities, 85<sup>th</sup> St and 86<sup>th</sup> St (Ocean City)

### **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
- 2020 local cost of replacement
  - Per unit
  - Per phase
  - Replacement of total quantity
- Percentage of future expenditures 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
- Predicted reserves based on current funding level

#### **Five-Year Outlook**

- Line item numbers
- Reserve component inventory of only the expenditures anticipated to occur within the first five years
- Schedule of estimated future costs for each reserve component anticipated to occur within the first five years

The purpose of a Reserve Study is to provide an opinion of reasonable annual Reserve Contributions. Prediction of exact timing and costs of minor Reserve Expenditures typically will not significantly affect the 30-year cash flow analysis. Adjustments to the times and/or costs of expenditures may not always result in an adjustment in the recommended Reserve Contributions.

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***.

## RESERVE EXPENDITURES

**Antigua  
Condominium**  
Ocean City, Maryland

**Explanatory Notes:**

- 1) **2.0%** is the estimated Inflation Rate for estimating Future Replacement Costs.
- 2) FY2020 is Fiscal Year beginning January 1, 2020 and ending December 31, 2020.

Line Item	Total Quantity	Per Phase Quantity	Units	Reserve Component Inventory	Estimated 1st Year of Event	Life Analysis, Years		Costs, \$			Percentage of Future Expenditures	RUL = 0														
						Useful	Remaining	Unit (2020)	Per Phase (2020)	Total (2020)		FY2020	1 2021	2 2022	3 2023	4 2024	5 2025	6 2026	7 2027	8 2028	9 2029	10 2030	11 2031	12 2032	13 2033	14 2034
<b>Exterior Building Elements</b>																										
1.060	25,000	25,000	Square Feet	Balconies and Walkways, Concrete, Repairs and Waterproof Coating Applications	2028	6 to 10	8	14.00	350,000	350,000	19.4%														410,081	
1.180	5	5	Each	Doors, Common Entrance, Automatic	2034	10 to 15	14	10,000.00	50,000	50,000	2.1%														65,974	
1.200	58	58	Each	Doors, Common	2034	to 25	14	1,000.00	58,000	58,000	1.0%														76,530	
1.201	58	58	Each	Doors, Common, Paint Finishes	2026	8 to 10	6	100.00	5,800	5,800	0.3%						6,532									
1.250	1	1	Allowance	Letters, Property Identification	2032	to 25	12	11,500.00	11,500	11,500	0.2%														14,585	
1.260	80	80	Each	Light Fixtures	2032	to 20	12	100.00	8,000	8,000	0.1%														10,146	
1.400	600	600	Square Feet	Roofs, Modified Bitumen, Rest Rooms	2032	15 to 20	12	44.00	26,400	26,400	0.4%														33,482	
1.500	7,770	7,770	Square Feet	Roofs, Modified Bitumen, Tower	2022	15 to 20	2	41.73	324,271	324,271	11.2%			337,372												
1.880	73,600	73,600	Square Feet	Walls, Stucco, Paint Finishes and Capital Repairs	2025	6 to 8	5	4.50	331,200	331,200	25.1%						365,672								428,443	
1.980	3,600	1,800	Square Feet	Windows and Doors, Aluminum Frames, Common, Phased	2026	to 45	6 to 7	55.00	99,000	198,000	3.0%						111,490	113,720								
<b>Interior Building Elements</b>																										
2.100	2	2	Each	Elevator Cab Finishes	2028	to 20	8	15,000.00	30,000	30,000	1.2%														35,150	
2.101	2	2	Each	Elevator Cab Finishes, Floor Coverings, Interim	2038	to 10	18	6,500.00	13,000	13,000	0.2%															
2.820	2	2	Each	Paint Finishes, Stairwells (Includes Railings)	2030	15 to 20	10	5,500.00	11,000	11,000	0.4%														13,409	
2.900	2	2	Each	Rest Rooms, Renovation	2024	to 25	4	8,000.00	16,000	16,000	0.6%				17,319											
2.940	2	2	Each	Sauna Inserts	2027	to 25	7	10,000.00	20,000	20,000	0.3%														22,974	
<b>Building Services Elements</b>																										
3.300	2	2	Each	Air Handling Units, Split Systems, Ductless	2033	to 15	13	6,250.00	12,500	12,500	0.5%														16,170	
3.360	2	2	Each	Elevators, Traction, Controls and Equipment	2038	to 30	18	175,000.00	350,000	350,000	6.7%															
3.440	1	1	Each	Generator, Emergency, 300-kW (Includes Transfer Switch)	2044	to 30	24	89,000.00	89,000	89,000	1.9%															
3.500	1	1	Allowance	Geothermal System, Controls and Capital Repairs	2033	to 15	13	26,000.00	26,000	26,000	1.1%														33,634	
3.555	1	1	Allowance	Life Safety System, Control Panel	2028	to 15	8	20,000.00	20,000	20,000	0.7%														23,433	
3.560	1	1	Allowance	Life Safety System, Emergency Devices	2038	to 25	18	21,000.00	21,000	21,000	0.4%															
3.605	312	78	Each	Pipes, Riser Sections, Domestic Water, Waste and Vent, Phased	2042	to 80+	22 to 30+	1,200.00	93,600	374,400	4.1%															
3.700	2	2	Each	Pumps, Domestic Cold Water, 15-HP (Incl. Controls & VFDs)	2026	to 15	6	19,500.00	39,000	39,000	1.4%														43,920	
3.701	2	2	Each	Pumps, Geothermal System, 25-HP (Incl. Controls & VFDs)	2038	15 to 20	18	22,000.00	44,000	44,000	0.8%															
3.820	2	1	Allowance	Security System, Phased (2021, 2023 and 2025 are Budgeted)	2021	10 to 15	1 to 8	8,500.00	8,500	17,000	1.2%		15,000		12,500		12,500						9,959		11,440	
3.880	13	13	Floors	Trash Chute and Doors	2027	to 50	7	3,000.00	39,000	39,000	0.6%														44,799	
3.900	1	1	Each	Trash Compactor	2027	to 20	7	14,500.00	14,500	14,500	0.6%														16,656	
<b>Property Site Elements</b>																										
4.040	3,150	3,150	Square Yards	Asphalt Pavement, Mill and Overlay	2024	15 to 20	4	20.00	63,000	63,000	0.9%														68,193	
4.045	3,150	3,150	Square Yards	Asphalt Pavement, Total Replacement	2044	15 to 20	24	32.50	102,375	102,375	2.2%															
4.105	2,200	2,200	Square Feet	Decks, Wood, Initial	2021	to 25	1	23.73	52,206	52,206	1.9%		53,250													
<b>Pool Elements</b>																										
6.200	5,580	5,580	Square Feet	Concrete Deck, Textured Coating, Partial Replacements and Repairs	2030	8 to 12	10	5.00	27,900	27,900	1.7%														34,010	
6.400	340	340	Linear Feet	Fences, Vinyl and Aluminum	2033	15 to 20	13	50.00	17,000	17,000	0.3%														21,991	
6.600	2	1	Allowance	Mechanical Equipment, Phased	2023	to 15	3 to 10	10,000.00	10,000	20,000	0.7%				10,612										12,190	
6.601	2	2	Each	Mechanical Equipment, Heaters	2035	to 15	15	16,500.00	33,000	33,000	1.4%														44,414	
6.800	1,320	1,320	Square Feet	Pool Finish, Plaster	2023	8 to 12	3	12.50	16,500	16,500	0.9%				17,510										21,345	
6.801	130	130	Linear Feet	Pool Finish, Tile	2023	15 to 25	3	35.00	4,550	4,550	0.2%				4,828											

## RESERVE EXPENDITURES

### Antigua Condominium Ocean City, Maryland

Line Item	Total Quantity	Per Phase Quantity	Units	Reserve Component Inventory	Estimated 1st Year of Event	Life Analysis, Years		Costs, \$			Percentage of Future Expenditures	16 2036	17 2037	18 2038	19 2039	20 2040	21 2041	22 2042	23 2043	24 2044	25 2045	26 2046	27 2047	28 2048	29 2049	30 2050
						Useful	Remaining	Unit (2020)	Per Phase (2020)	Total (2020)																
<b>Exterior Building Elements</b>																										
1.060	25,000	25,000	Square Feet	Balconies and Walkways, Concrete, Repairs and Waterproof Coating Applications	2028	6 to 10	8	14.00	350,000	350,000	19.4%	480,475								562,953						
1.180	5	5	Each	Doors, Common Entrance, Automatic	2034	10 to 15	14	10,000.00	50,000	50,000	2.1%													88,792		
1.200	58	58	Each	Doors, Common	2034	to 25	14	1,000.00	58,000	58,000	1.0%															
1.201	58	58	Each	Doors, Common, Paint Finishes	2026	8 to 10	6	100.00	5,800	5,800	0.3%							8,967							10,506	
1.250	1	1	Allowance	Letters, Property Identification	2032	to 25	12	11,500.00	11,500	11,500	0.2%															
1.260	80	80	Each	Light Fixtures	2032	to 20	12	100.00	8,000	8,000	0.1%															
1.400	600	600	Square Feet	Roofs, Modified Bitumen, Rest Rooms	2032	15 to 20	12	44.00	26,400	26,400	0.4%															
1.500	7,770	7,770	Square Feet	Roofs, Modified Bitumen, Tower	2022	15 to 20	2	41.73	324,271	324,271	11.2%							501,317								
1.880	73,600	73,600	Square Feet	Walls, Stucco, Paint Finishes and Capital Repairs	2025	6 to 8	5	4.50	331,200	331,200	25.1%						501,989							588,160		
1.980	3,600	1,800	Square Feet	Windows and Doors, Aluminum Frames, Common, Phased	2026	to 45	6 to 7	55.00	99,000	198,000	3.0%															
<b>Interior Building Elements</b>																										
2.100	2	2	Each	Elevator Cab Finishes	2028	to 20	8	15,000.00	30,000	30,000	1.2%													52,231		
2.101	2	2	Each	Elevator Cab Finishes, Floor Coverings, Interim	2038	to 10	18	6,500.00	13,000	13,000	0.2%			18,567												
2.820	2	2	Each	Paint Finishes, Stairwells (Includes Railings)	2030	15 to 20	10	5,500.00	11,000	11,000	0.4%														19,925	
2.900	2	2	Each	Rest Rooms, Renovation	2024	to 25	4	8,000.00	16,000	16,000	0.6%													26,775		
2.940	2	2	Each	Sauna Inserts	2027	to 25	7	10,000.00	20,000	20,000	0.3%															
<b>Building Services Elements</b>																										
3.300	2	2	Each	Air Handling Units, Split Systems, Ductless	2033	to 15	13	6,250.00	12,500	12,500	0.5%													21,763		
3.360	2	2	Each	Elevators, Traction, Controls and Equipment	2038	to 30	18	175,000.00	350,000	350,000	6.7%			499,886												
3.440	1	1	Each	Generator, Emergency, 300-kW (Includes Transfer Switch)	2044	to 30	24	89,000.00	89,000	89,000	1.9%									143,151						
3.500	1	1	Allowance	Geothermal System, Controls and Capital Repairs	2033	to 15	13	26,000.00	26,000	26,000	1.1%													45,267		
3.555	1	1	Allowance	Life Safety System, Control Panel	2028	to 15	8	20,000.00	20,000	20,000	0.7%									31,538						
3.560	1	1	Allowance	Life Safety System, Emergency Devices	2038	to 25	18	21,000.00	21,000	21,000	0.4%			29,993												
3.605	312	78	Each	Pipes, Riser Sections, Domestic Water, Waste and Vent, Phased	2042	to 80+	22 to 30+	1,200.00	93,600	374,400	4.1%							144,704					159,765			
3.700	2	2	Each	Pumps, Domestic Cold Water, 15-HP (Incl. Controls & VFDs)	2026	to 15	6	19,500.00	39,000	39,000	1.4%						59,111									
3.701	2	2	Each	Pumps, Geothermal System, 25-HP (Incl. Controls & VFDs)	2038	15 to 20	18	22,000.00	44,000	44,000	0.8%			62,843												
3.820	2	1	Allowance	Security System, Phased (2021, 2023 and 2025 are Budgeted)	2021	10 to 15	1 to 8	8,500.00	8,500	17,000	1.2%								13,404						15,397	
3.880	13	13	Floors	Trash Chute and Doors	2027	to 50	7	3,000.00	39,000	39,000	0.6%															
3.900	1	1	Each	Trash Compactor	2027	to 20	7	14,500.00	14,500	14,500	0.6%													24,750		
<b>Property Site Elements</b>																										
4.040	3,150	3,150	Square Yards	Asphalt Pavement, Mill and Overlay	2024	15 to 20	4	20.00	63,000	63,000	0.9%															
4.045	3,150	3,150	Square Yards	Asphalt Pavement, Total Replacement	2044	15 to 20	24	32.50	102,375	102,375	2.2%									164,664						
4.105	2,200	2,200	Square Feet	Decks, Wood, Initial	2021	to 25	1	23.73	52,206	52,206	1.9%													87,362		
<b>Pool Elements</b>																										
6.200	5,580	5,580	Square Feet	Concrete Deck, Textured Coating, Partial Replacements and Repairs	2030	8 to 12	10	5.00	27,900	27,900	1.7%					41,458										50,537
6.400	340	340	Linear Feet	Fences, Vinyl and Aluminum	2033	15 to 20	13	50.00	17,000	17,000	0.3%															
6.600	2	1	Allowance	Mechanical Equipment, Phased	2023	to 15	3 to 10	10,000.00	10,000	20,000	0.7%		14,002							16,084						
6.601	2	2	Each	Mechanical Equipment, Heaters	2035	to 15	15	16,500.00	33,000	33,000	1.4%														59,775	
6.800	1,320	1,320	Square Feet	Pool Finish, Plaster	2023	8 to 12	3	12.50	16,500	16,500	0.9%									26,019						
6.801	130	130	Linear Feet	Pool Finish, Tile	2023	15 to 25	3	35.00	4,550	4,550	0.2%									7,175						



## RESERVE EXPENDITURES

**Antigua  
Condominium**  
Ocean City, Maryland

Line Item	Total Quantity	Per Phase Quantity	Units	Reserve Component Inventory	Estimated 1st Year of Event	Life Analysis, Years		Costs, \$			Percentage of Future Expenditures	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
						Useful	Remaining	Unit (2020)	Per Phase (2020)	Total (2020)		2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	
6.900	1,320	1,320	Square Feet	Structure and Deck, Total Replacement	2033	to 60	13	190.00	250,800	250,800	4.3%																
<b>Anticipated Expenditures, By Year (\$7,494,975 over 30 years)</b>												480,475	14,002	611,289	0	41,458	561,100	654,988	78,136	886,852	0	114,137	184,515	119,261	676,952	156,140	

## RESERVE FUNDING PLAN

### CASH FLOW ANALYSIS

#### Antigua Condominium

#### Individual Reserve Budgets & Cash Flows for the Next 30 Years

Ocean City, Maryland	FY2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
<b>Reserves at Beginning of Year (Note 1)</b>	N/A	240,000	325,678	156,868	294,842	408,883	245,040	311,993	347,699	106,611	348,851	538,216	794,084	998,803	419,135	546,155
<b>Total Recommended Reserve Contributions (Note 2)</b>	N/A	151,394	166,400	181,400	196,400	211,400	226,400	230,900	235,500	240,200	245,000	249,900	254,900	260,000	265,200	270,500
Plus <b>Estimated Interest Earned, During Year (Note 3)</b>	N/A	2,534	2,162	2,024	3,153	2,929	2,495	2,955	2,035	2,040	3,974	5,968	8,032	6,352	4,324	5,881
Less <b>Anticipated Expenditures, By Year</b>	N/A	(68,250)	(337,372)	(45,450)	(85,512)	(378,172)	(161,942)	(198,149)	(478,623)	0	(59,609)	0	(58,213)	(846,020)	(142,504)	(55,854)
<b>Anticipated Reserves at Year End</b>	<u>\$240,000</u>	<u>\$325,678</u>	<u>\$156,868</u>	<u>\$294,842</u>	<u>\$408,883</u>	<u>\$245,040</u>	<u>\$311,993</u>	<u>\$347,699</u>	<u>\$106,611</u>	<u>\$348,851</u>	<u>\$538,216</u>	<u>\$794,084</u>	<u>\$998,803</u>	<u>\$419,135</u>	<u>\$546,155</u>	<u>\$766,682</u>
Predicted Reserves based on 2021 funding level of: \$151,394	240,000	325,678	141,794	249,491	317,915	92,978	83,219	37,003	(291,366)	(141,913)						

(NOTE 5)

(continued)

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

	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
<b>Reserves at Beginning of Year</b>	766,682	568,087	841,801	523,629	822,359	1,088,059	840,197	501,921	746,277	186,805	519,670	747,510	913,436	1,153,334	842,222
<b>Total Recommended Reserve Contributions</b>	275,900	281,400	287,000	292,700	298,600	304,600	310,700	316,900	323,200	329,700	336,300	343,000	349,900	356,900	364,000
Plus <b>Estimated Interest Earned, During Year</b>	5,980	6,316	6,117	6,030	8,558	8,638	6,012	5,592	4,180	3,165	5,677	7,441	9,259	8,940	8,515
Less <b>Anticipated Expenditures, By Year</b>	(480,475)	(14,002)	(611,289)	0	(41,458)	(561,100)	(654,988)	(78,136)	(886,852)	0	(114,137)	(184,515)	(119,261)	(676,952)	(156,140)
<b>Anticipated Reserves at Year End</b>	<u>\$568,087</u>	<u>\$841,801</u>	<u>\$523,629</u>	<u>\$822,359</u>	<u>\$1,088,059</u>	<u>\$840,197</u>	<u>\$501,921</u>	<u>\$746,277</u>	<u>\$186,805</u>	<u>\$519,670</u>	<u>\$747,510</u>	<u>\$913,436</u>	<u>\$1,153,334</u>	<u>\$842,222</u>	<u>\$1,058,597</u>

(NOTE 5)

(NOTE 4)

#### Explanatory Notes:

- 1) Year 2021 starting reserves are projected by the Board as of January 1, 2021; FY2021 starts January 1, 2021 and ends December 31, 2021.
- 2) 2022 is the first year of recommended contributions.
- 3) 0.9% is the estimated annual rate of return on invested reserves
- 4) Accumulated year 2050 ending reserves consider the age, size, overall condition and complexity of the property.
- 5) Threshold Funding Years (reserve balance at critical point).

**FIVE-YEAR OUTLOOK****Antigua  
Condominium**  
Ocean City, Maryland

Line Item	Reserve Component Inventory	RUL = 0 FY2020	1 2021	2 2022	3 2023	4 2024	5 2025
<b><u>Exterior Building Elements</u></b>							
1.500	Roofs, Modified Bitumen, Tower			337,372			
1.880	Walls, Stucco, Paint Finishes and Capital Repairs						365,672
<b><u>Interior Building Elements</u></b>							
2.900	Rest Rooms, Renovation					17,319	
<b><u>Building Services Elements</u></b>							
3.820	Security System, Phased (2021, 2023 and 2025 are Budgeted)		15,000		12,500		12,500
<b><u>Property Site Elements</u></b>							
4.040	Asphalt Pavement, Mill and Overlay					68,193	
4.105	Decks, Wood, Initial		53,250				
<b><u>Pool Elements</u></b>							
6.600	Mechanical Equipment, Phased				10,612		
6.800	Pool Finish, Plaster				17,510		
6.801	Pool Finish, Tile				4,828		
<b>Anticipated Expenditures, By Year (\$7,494,975 over 30 years)</b>		0	68,250	337,372	45,450	85,512	378,172

## 4. RESERVE COMPONENT DETAIL

The Reserve Component Detail of this *Full Reserve Study* includes enhanced solutions and procedures for select significant components. This section describes the Reserve Components, documents specific problems and condition assessments, 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



Front elevation overview



Rear elevation overview

### Balconies and Walkways, Concrete

---

**Line Item:** 1.060

**Quantity:** The Association maintains 89 concrete balconies and 14 interior walkways which comprise approximately 25,000 square feet of horizontal surface area.

**History:** The interior walkways were coated and repaired in 2020; the exterior balconies were coated and repaired in 2016.

**Condition:** Good overall



**Typical exterior balconies**



**Interior balcony overview (14<sup>th</sup> floor only)**



**Typical interior walkway overview**



**Interior walkway surface**

**Useful Life:** Capital repairs including a close-up visual inspection, patching of delaminated concrete, routing and filling of cracked concrete, and waterproof coating applications every 8- to 12-years.

**Component Detail Notes:** A waterproof coating application minimizes storm water penetration into the concrete and therefore minimizes future concrete deterioration. *Failure to maintain a waterproof coating on the balconies and walkways will result in increased concrete repairs and replacements as the balconies and walkways age.* Capital repairs may also include replacement of the caulked joint between the balcony or walkway and the building.

**Priority/Criticality:** Defer only upon opinion of independent professional or engineer

**Expenditure Detail Notes:** Expenditure timing and costs are depicted in the **Reserve Expenditures** table in Section 3. Our cost includes the following activities per event:

- Partial depth replacement of up to one percent (1%) of the concrete topsides, edges and undersides
- Crack repairs as necessary
- Replacement of perimeter sealants as needed
- Application of a waterproof coating (Urethane based elastomeric)

## Doors

---

**Line Items:** 1.180, 1.200 and 1.201

**Quantity:** The Association maintains five automatic doors and 58 common doors.

**History:** The automatic door was installed in 2020. The common doors were replaced from 2009-2011. The common and unit entrance doors were painted in 2018.

**Condition:** Good overall



**Automatic door assembly**



**Typical unit door**

**Useful Life:** 10- to 15-years for the automatic doors and up to 25 years for the utility room and stairwell doors with paint finishes every 8- to 10-years.

**Priority/Criticality:** Defer only upon opinion of independent professional or engineer

**Expenditure Detail Notes:** Expenditure timing and costs are depicted in the **Reserve Expenditures** table in Section 3. The estimate of cost for paint finishes to the doors is based on a historical cost furnished by Management. The cost in 2020 for replacement of the automatic entrance door is the remaining payment.

## Letters, Property Identification

---

**Line Item:** 1.250

**Quantity:** 11 letters on the front elevation of the building

**History:** Unknown

**Condition:** Good to fair overall



**Property identification letters**

**Useful Life:** Up to 25 years

**Priority/Criticality:** Per Board discretion

**Expenditure Detail Notes:** Expenditure timing and costs are depicted in the **Reserve Expenditures** table in Section 3.

## **Light Fixtures**

---

**Line Item:** 1.260

**Quantity:** Approximately 80 exterior wall mounted plastic light fixtures accent the walkways.

**History:** Unknown

**Condition:** Good to fair overall



**Typical exterior light fixture**

**Useful Life:** Up to 20 years

**Priority/Criticality:** Per Board discretion

**Expenditure Detail Notes:** Expenditure timing and costs are depicted in the **Reserve Expenditures** table in Section 3.

## **Roofs, Modified Bitumen**

---

**Line Items:** 1.500 and 1.501

**Quantity:** 7,770 square feet at the roof of the tower including the roof above the elevator mechanical room and 600 square feet at the roofs above the rest rooms.

**History:** Replaced in 2003; the Association conducts inspections of the roofs annually. We concur with this preventive maintenance practice and recommend the Association continue to fund these inspections through the operating budget. The rest room roofs were replaced in 2012.

**Condition:** Fair overall with previous repairs and general deterioration evident.



**Roof overview**



**Roof overview**



**Roof overview**

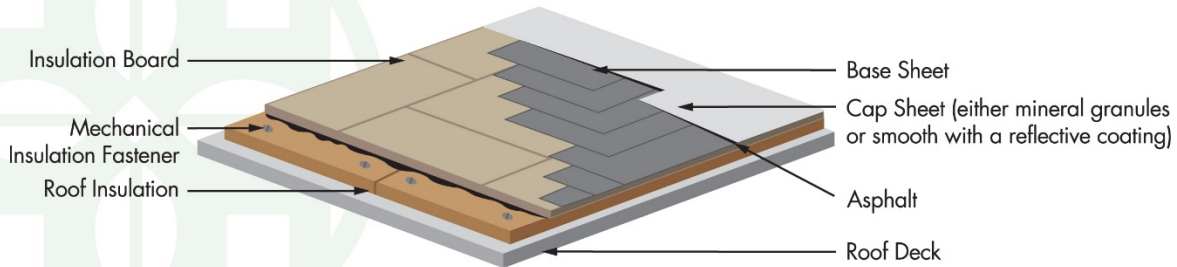


**Previous roof repairs**

**Useful Life:** 15- to 20-years

**Component Detail Notes:** Modified bitumen roofing systems are composed of factory-manufactured sheets of polymer-modified bitumen with polyester and/or fiberglass reinforcements. The bitumen adds a waterproof characteristic to the system and the reinforcements add strength and puncture resistance. These factory assembled roofing systems offer the advantages of a built-up roofing system through a less labor-intensive installation. The following detail depicts a typical modified bitumen roof although it may not reflect the actual configuration at Antigua:

## MODIFIED BITUMEN ROOF DETAIL



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Contractors can install a new modified bitumen 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.

**Priority/Criticality:** Defer only upon opinion of independent professional or engineer

**Expenditure Detail Notes:** Expenditure timing and costs are depicted in the **Reserve Expenditures** table in Section 3. The estimate of cost for the rest room roofs is based on a historical cost furnished by the Board.

## Walls, Stucco

---

**Line Item:** 1.880

**Quantity:** Approximately 73,600 square feet of the building exteriors

**History:** The interior stucco walls were last coated and repaired in 2020. The exterior stucco walls were last coated and repaired in 2017.

**Condition:** Good to fair overall with previous repairs, finish deterioration and trapped water evident



**Interior stucco walls overview**



**Exterior stucco walls overview**



**Previous stucco repair at window**



**Stucco finish deterioration**



**Stucco finish deterioration at soffit**

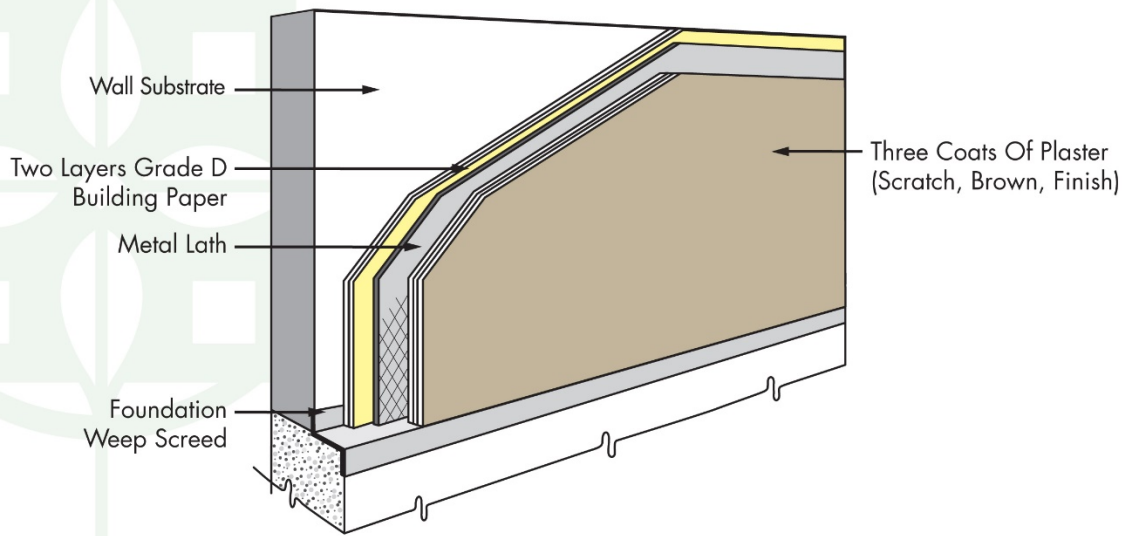


**Water trapped behind stucco coating**

**Useful Life:** We recommend inspections, repairs and paint finish applications every 8- to 10-years.

**Component Detail Notes:** The following graphic details the typical components of a stucco wall system on frame construction although it may not reflect the actual configuration at Antigua:

## STUCCO DETAIL



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**Priority/Criticality:** Defer only upon opinion of independent professional or engineer

**Expenditure Detail Notes:** Expenditure timing and costs are depicted in the **Reserve Expenditures** table in Section 3. Our estimate of cost anticipates the following in coordination with each paint finish application:

- Complete inspection of the stucco
- Crack repairs as needed (Each paint product has the limited ability to cover and seal cracks but we recommend repair of all cracks which exceed the ability of the paint product to bridge.)
- Replacement of up to two percent (2%), of the stucco walls (The exact amount of area in need of replacement will be discretionary based on the actual future conditions and the desired appearance.)
- Replacement of up to fifty percent (50%) of the sealants at the windows and doors in coordination with each paint finish application.

## **Windows and Doors, Aluminum Frames, Common**

---

**Line Item:** 1.980

**Quantity:** Approximately 3,600 square feet of common windows and doors

**History:** Original

**Condition:** Good overall



**Typical common window**



**Elevator lobby windows overview**

**Useful Life:** Up to 45 years

**Priority/Criticality:** Defer only upon opinion of independent professional or engineer

**Expenditure Detail Notes:** Expenditure timing and costs are depicted in the **Reserve Expenditures** table in Section 3.

## **Interior Building Elements**

### **Elevator Cab Finishes**

---

**Line Item:** 2.100 and 2.101

**Quantity:** Two elevators; the cab finishes consist of:

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

**History:** Replaced in 2008; the cab finish flooring was replaced in 2019.

**Condition:** Good overall



**Elevator cab finishes**

**Useful Life:** Up to 20 years for the finishes on the walls and ceilings and up to 10 years for the floor coverings.

**Priority/Criticality:** Per Board discretion

**Expenditure Detail Notes:** Expenditure timing and costs are depicted in the **Reserve Expenditures** table in Section 3.

## **Paint Finishes, Stairwells**

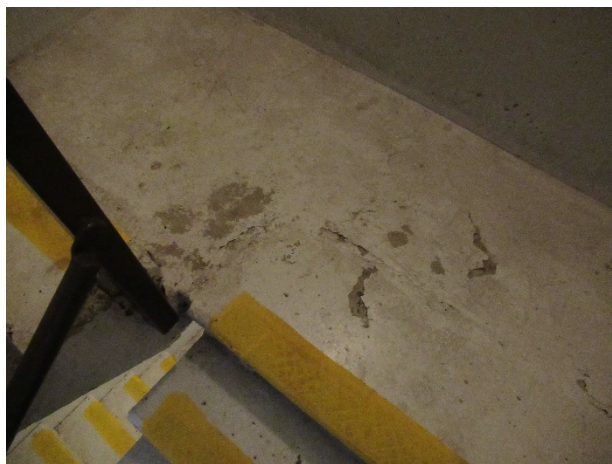
---

**Line Item:** 2.820

**Quantity:** Two each

**History:** Stairwell concrete will be repaired in 2020.

**Conditions:** Fair overall with finish deterioration evident



**Stairwell paint finish deterioration**

**Useful Life:** 15- to 20-years

**Priority/Criticality:** Per Board discretion

**Expenditure Detail Notes:** Expenditure timing and costs are depicted in the **Reserve Expenditures** table in Section 3. We assume minor repairs to the stairwell concrete will be funded on an as-needed basis through the operating budget.

## Rest Rooms

---

**Line Item:** 2.900

**Quantity:** Two common rest rooms located next to the pool

**History:** Unknown

**Condition:** Fair overall with general deterioration evident



**Rest room floor covering, partition and plumbing fixture overview**

**Useful Life:** Renovation every 20- to 25-years

**Component Detail Notes:** Components include:

- Tile floor coverings
- Paint finishes
- Light fixtures
- Plumbing fixtures

**Priority/Criticality:** Per Board discretion

**Expenditure Detail Notes:** Expenditure timing and costs are depicted in the **Reserve Expenditures** table in Section 3.

## Sauna Inserts

---

**Line Item:** 2.940

**Quantity:** Two each

**History:** Unknown

**Condition:** Fair overall with wood deterioration evident



**Sauna door**  
Note: Wood deterioration.



**Sauna interior**  
Note: Wood deterioration.

**Useful Life:** Up to 25 years

**Priority/Criticality:** Defer only upon opinion of independent professional or engineer

**Expenditure Detail Notes:** Expenditure timing and costs are depicted in the **Reserve Expenditures** table in Section 3.

## Building Services Elements

### Air Handling Units, Split Systems, Ductless

---

**Line Item:** 3.300

**Quantity:** The Association maintains two ductless split systems comprising one at the elevator mechanical room and one at the office.

**History:** The split systems were installed in the last five years.

**Condition:** Reported satisfactory without operational deficiencies

**Useful Life:** Up to 15 years

**Priority/Criticality:** Defer only upon opinion of independent professional or engineer

**Expenditure Detail Notes:** Expenditure timing and costs are depicted in the **Reserve Expenditures** table in Section 3. The condensing unit may require replacement prior to replacement of the related interior forced air unit. For purposes of this Reserve Study, we assume coordination of replacement of the interior forced air unit, evaporator coil, refrigerant lines and exterior condensing unit. The estimate of cost is based on historical installation costs furnished by the Board.

## **Elevators, Traction**

---

**Line Item:** 3.360

**Quantity:** Two traction elevators

**History:** The majority of the elevator system components were replaced in 2008.

**Condition:** Reported satisfactory and service interruptions are reportedly infrequent.



**Elevator hoist**

**Useful Life:** Up to 30 years however, the scarcity of parts, and the potential frequency and duration of service interruption makes controls replacement more desirable as the components age.

**Component Detail Notes:** The elevators utilize programmable logic computer controls.

**Preventative Maintenance Notes:** We recommend the Association obtain and adhere to the manufacturer's recommended maintenance plan. We also recommend the Association maintain a maintenance contract with a qualified professional. The required preventative maintenance may vary in frequency and scope based on the unit's age, operational condition, or changes in technology. We note the following select recommended preventative maintenance activities to maximize the remaining useful life:

- Ongoing:

- Maintain a maintenance contract with a qualified professional for the elevator(s) and follow the manufacturer's specific recommended maintenance plan adhering to local, state, and/or federal inspection guidelines
- As-needed:
  - Keep an accurate log of all repairs and inspection dates
  - Inspect and adjust misaligned door operators
  - Clear and remove any items located in the elevator machine room(s) not associated with the elevator components (These rooms should never be used for storage)
  - Inspect electrical components for signs of overheating or failure
  - Inspect controls
  - Lubricate the hoist cables
  - Inspect hoist cables and motors for signs of wear or deterioration
  - Ensure air temperature and humidity of machine/pump housing room meets the designated specified range for proper operation
  - Ensure all call buttons are in working condition

**Priority/Criticality:** Defer only upon opinion of independent professional or engineer

**Expenditure Detail Notes:** Expenditure timing and costs are depicted in the **Reserve Expenditures** table in Section 3. We anticipate replacement of the following traction elevator system components:

- Cab control panels
- Door operators
- Hallway panels/buttons
- Hoists and motors
- Microprocessor based controllers

## **Generator, Emergency**

---

**Line Item:** 3.440

**Quantity:** One 300-kW (kilowatt) diesel generator

**History:** The generator was installed in 2019.

**Condition:** Reported satisfactory without operational deficiencies



**Generator**

**Useful Life:** Up to 30 years

**Preventative Maintenance Notes:** We recommend the Association obtain and adhere to the manufacturer's recommended maintenance plan. We also recommend the Association maintain a maintenance contract with a qualified professional. As a reference, the Association may consult the following document: *NFPA 110, Standard for Emergency and Standby Power Systems*. The required preventative maintenance may vary in frequency and scope based on the unit's age, operational condition, or changes in technology. We note the following select recommended preventative maintenance activities to maximize the remaining useful life:

- Weekly:
  - Check fuel and oil levels
  - Inspect cooling and exhaust systems
  - Check battery, electrical components and transfer switches
  - Run generator without load and look for unusual conditions such as leaks
- Monthly:
  - Exercise generator under load test for minimum of 30 minutes
  - Check oil levels before running and after 10 minutes of run time
- Annually:
  - Complete full inspection and necessary repairs
  - Change fuel and air filters
  - Change oil and replace oil filter
  - Change spark plugs
  - Flush cooling system

**Priority/Criticality:** Defer only upon opinion of independent professional or engineer

**Expenditure Detail Notes:** Expenditure timing and costs are depicted in the **Reserve Expenditures** table in Section 3. Our cost is based on information provided by the Association and includes replacement of the transfer switch.

## **Geothermal System, Controls and Capital Repairs**

---

**Line Item:** 3.500

**History:** Installed in 1996; repaired in 2018

**Condition:** Good overall



**Geothermal system control panel**



**Geothermal system loop manifolds**



**Geothermal system pressure tank**

**Useful Life:** Up to 50 years with capital repairs up to every 15 years.

**Component Detail Notes:** The geothermal system comprises 16 underground loops through which the geothermal system pumps circulate water through. The consistent underground temperature cools this water in the summer and warms this water in the winter. The water is then circulated through the building to the air handlers at each individual unit to heat or cool the unit depending on the season.

**Priority/Criticality:** Defer only upon opinion of independent professional or engineer

**Expenditure Detail Notes:** Expenditure timing and costs are depicted in the **Reserve Expenditures** table in Section 3.

## Life Safety System

---

**Line Items:** 3.555 and 3.560

**Quantity:** The life safety system at Antigua includes the following components:

- Audio/visual fixtures
- Control panel
- Exit light fixtures
- Pull stations
- Wiring

**History:** Replaced in 2008

**Conditions:** Reported satisfactory



**Main life safety system control panel**



**Life safety system annunciator and pull station**

**Useful Life:** Up to 25 years for the devices and up to 15 years for the control panel

**Preventative Maintenance Notes:** We recommend the Association obtain and adhere to the manufacturer's recommended maintenance plan. In accordance with *NFPA 72* (National Fire Alarm and Signaling Code) we also recommend the Association maintain a maintenance contract with a qualified professional. The required preventative maintenance may vary in frequency and scope based on the age of the components, operational condition, or changes in technology. We note the following select recommended preventative maintenance activities to maximize the remaining useful life:

- Semi-annually:

- Inspect and test all components and devices, including, but not limited to, control panels, annunciators, detectors, audio/visual fixtures, signal transmitters and magnetic door holders
- Test backup batteries
- As-needed:
  - Ensure clear line of access to components such as pull stations
  - Ensure detectors are properly positioned and clean of debris

**Priority/Criticality:** Defer only upon opinion of independent professional or engineer

**Expenditure Detail Notes:** Expenditure timing and costs are depicted in the **Reserve Expenditures** table in Section 3. Changes in technology or building codes may make a replacement desirable prior to the end of the functional life. 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.

## Pipes

---

**Line Item:** 3.605

**Quantity:** Based on experience with similar buildings, we estimate the following quantity of riser sections and types of pipe materials within Antigua:

Type	Risers	Floors	Riser Sections
Domestic Cold Water Supply	8	13	104
Sanitary Waste and Disposal	8	13	104
Vent	8	13	104
		<b>Total</b>	<b>312</b>

**History and Conditions:**

- Building Heating and Cooling – Original and reported in satisfactory condition
- Domestic Water, Supply and Return – Original and reported in satisfactory condition
- Sanitary Waste Disposal and Vent – Original and reported in satisfactory condition

**Component Detail Notes:**

**Domestic Water** - Copper piping is the predominant type of pipe used in new construction for domestic water piping. With low mineral content in the water, the useful life of copper domestic water pipes is up to and sometimes beyond 80 years. However, there is recent evidence that copper piping prematurely develops pinhole leaks. Studies have shown that changes in water treatment practices, recently required in response to U.S. Environmental Protection Agency regulations, are

dramatically increasing the risk of pitting corrosion in many geographic locations. Utility companies are implementing higher chloride levels to prevent outbreaks of waterborne disease. These higher chloride levels can accelerate corrosion of copper pipes and indeterminately reduce their useful life.

In the event that numerous pinhole leaks develop or occur throughout the system of pipes, Antigua should also consider “in-place” pipe restoration technology. This process includes drying, sandblasting away interior pipe occlusions and applying an epoxy lining to the interior surfaces of the pipes. Future updates of this study will consider the possibility of the pipe restoration process in lieu of pipe replacement at Antigua. Restoration technology can extend the useful life of a pipe system thus avoiding a system pipe replacement.

**Sanitary Waste Disposal and Vent** - The 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.

**Pipes, Remaining** - We anticipate a useful life of up to and sometimes beyond 100 years for the fire standpipes and interior sprinkler pipes. Therefore, we do not foresee the need to budget for replacement of these pipes within the 30-year scope of this study. Future updates of this study will revisit the need to include partial replacement of these pipes.

**Preventative Maintenance Notes:** The required preventative maintenance may vary in frequency and scope based on the building’s age and demands of the piping systems. We note the following select recommended preventative maintenance activities to maximize the remaining useful life:

- Quarterly:
  - Inspect all visible piping for corrosion and leaks, including common areas or areas immediately surrounding pipes such as insulation, ceiling tiles or the floor for moisture, water accumulation, mold or mildew
- Annually:
  - Verify system pressure is sufficient (pressurized piping systems)
  - Check accessible valves for proper operation
  - Test backflow prevention devices
  - Inspect and obtain certification for pressure relief valves
  - Test drain line flow rates
  - Mechanically or chemically clean waste lines as needed

**Priority/Criticality:** Defer only upon opinion of independent professional or engineer

**Expenditure Detail Notes:** Expenditure timing and costs are depicted in the **Reserve Expenditures** table in Section 3. 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, pipes within the units or significant interior finishes.

We recommend the Association budget the following expenditures:

- Domestic water, waste and vent - We include expenditures to replace 78 riser sections. Our estimate provides funds to replace approximately fifty percent (50%) of the riser sections during the next 30 years.

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.

Although it is likely that the times of replacement and extent of repair costs may vary from the budgetary allowance, Antigua 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.

We recommend the Association budget for replacement of the following items through the operating budget:

- Replacement of valves on an as-needed basis
- Minor pipe repairs and replacements
- Invasive investigation of the condition of the piping system prior to beginning more aggregate replacements
- Rodding of waste pipe systems

## **Pumps**

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**Line Items:** 3.700, 3.701 and 3.770

**Quantity:** Two domestic water pumps, two geothermal system pumps and one fire suppression system pump

**History:** The domestic water pumps were replaced in 2011. The geothermal system was installed in 2018. The fire suppression system pump was installed in 2020

**Condition:** Reported satisfactory without operational deficiencies



**Domestic water pumps, manifold, control panel and variable frequency drives**



**Geothermal system pump and variable frequency drives**

**Useful Life:** Up to 15 years for the 15-HP domestic water pumps, 15- to 20-years for the 25-HP geothermal system pumps and up to 40 years for the fire suppression pump

**Component Detail Notes:** 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.

**Preventative Maintenance Notes:** We recommend the Association obtain and adhere to the manufacturer's recommended maintenance plan. We also recommend the Association maintain a maintenance contract with a qualified professional. The required preventative maintenance may vary in frequency and scope based on the unit's age, operational condition, or changes in technology. Valuable motor information to note in a preventative maintenance plan or schedule includes age of unit and last time of repair, horsepower and rpm (revolutions per minute), bearing type and conditions surrounding motor/pump. We note the following select recommended preventative maintenance activities to maximize the remaining useful life:

- Weekly:
  - Check/adjust controls
  - Check/adjust pressure levels
  - Check for leaks
  - Conduct churn tests
- Quarterly:
  - Inspect/clean motors
  - Inspect mountings and connections for proper alignment, torque and condition

- Inspect/replace pump packing as needed, consider replacement with mechanical seals
- Check for appropriate oil levels
- Semi-annually:
  - Lubricate pumps, motors and motor bearings
- Annually:
  - Inspect belts for wear and/or replace belts
  - Clean filters if present
  - Assess proper internal component performance and replace damaged or malfunction components as necessary, and tighten fittings
  - Access temperature and vibration performance of motors in accordance with the intended design

**Priority/Criticality:** Defer only upon opinion of independent professional or engineer

**Expenditure Detail Notes:** Expenditure timing and costs are depicted in the **Reserve Expenditures** table in Section 3. Our costs include an allowance for replacement of the variable frequency drives (VFD) and controls. The cost in 2020 for the fire suppression system pump represents a remaining payment.

## **Security System**

---

**Line Item:** 3.820

**Quantity:** Antigua utilizes the following security system components:

- Cameras (12)
- Multiplexer (1)
- Recorder (1)

**History:** Installed in 2008

**Condition:** Reported satisfactory



**Typical camera**

**Useful Life:** 10- to 15-years

**Preventative Maintenance Notes:** We recommend the Association obtain and adhere to the manufacturer's recommended maintenance plan. The required preventative maintenance may vary in frequency and scope based on the unit's age, operational condition, or changes in technology. We note the following select recommended preventative maintenance activities to maximize the remaining useful life:

- Monthly:
  - Check cameras for proper focus, fields of view are unobstructed and camera and lenses are clean and dust-free
  - Check recording equipment for proper operation
  - Verify monitors are free from distortion with correct brightness and contrast
- Annually:
  - Check exposed wiring and cables for wear, proper connections and signal transmission
  - Check power connections, and if applicable, functionality of battery power supply systems

**Priority/Criticality:** Per Board discretion

**Expenditure Detail Notes:** Expenditure timing and costs are depicted in the **Reserve Expenditures** table in Section 3. The Association should anticipate replacement of up to fifty percent (50%) of the security system components per event. The events in 2021, 2023 and 2025 represent planned timings and costs which were provided by the Board.

## **Trash Chute and Doors**

---

**Line Item:** 3.880

**Quantity:** One trash chute

**History:** Original

**Condition:** Reported satisfactory



**Useful Life:** Up to 50 years

**Component Detail Notes:** 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.

**Preventative Maintenance Notes:** We note the following select recommended preventative maintenance activities to maximize the remaining useful life:

- Weekly:
  - Clean doors and latches
  - In accordance with *NFPA 82* and fire code, ensure all trash chute doors self-latch and self-close
- Monthly:
  - Check operation of discharge door
  - Inspect fusible link and replace if necessary
  - If applicable, inspect, reinforce and/or replace discharge elbow
- Quarterly:
  - If applicable, check vent cap for damage and tighten fasteners
- Semi-annually:
  - Lubricate and/or replace doors, hinges and latches
  - Clear obstructions, clean and scrape trash chute and doors. The frequency of this activity may vary based upon occupancy and usage rates. This activity may also be based upon limitation of unwanted odors, prevention of harmful bacteria, pest infiltration and debris removal to further prevent fire hazards.

**Priority/Criticality:** Per Board discretion

**Expenditure Detail Notes:** Expenditure timing and costs are depicted in the **Reserve Expenditures** table in Section 3.

## Trash Compactor

---

**Line Item:** 3.900

**Quantity:** One each

**History:** Installed in 2007

**Condition:** Reported satisfactory without operational deficiencies



Trash compactor

**Useful Life:** Up to 20 years

**Preventative Maintenance Notes:** We recommend the Association obtain and adhere to the manufacturer's recommended maintenance plan. We also recommend the Association maintain a maintenance contract with a qualified professional. The required preventative maintenance may vary in frequency and scope based on the unit's age, operational condition, or changes in technology. We note the following select recommended preventative maintenance activities to maximize the remaining useful life:

- Weekly:
  - Check hydraulic oil level with cylinder fully retracted to make sure oil is at appropriate level
  - Check hydraulic hoses for kinks, leaks or other damage
  - Check to make sure all safety guards and access covers are secure and in place
- Monthly:
  - Make sure lower door hinges and lock assembly are properly greased
  - Check all nut and bolt connections to make sure they are tight and secure

- Clean the power unit and keep unit clear of debris
- Annually:
  - Have all electrical connections inspected by a licensed electrician to ensure proper connectivity and safe connections. The motor draw should be checked and recorded to help prevent failure.
  - The hydraulic system should be inspected and repaired, including draining and refilling the hydraulic fluid reservoir.
  - The oil filter should be changed after a maximum of 250 hours of operation. The oil filter should be changed more frequently for compactors located in hotter environments with more dust present.

**Priority/Criticality:** Per Board discretion

**Expenditure Detail Notes:** Expenditure timing and costs are depicted in the **Reserve Expenditures** table in Section 3.

## Property Site Elements

### Asphalt Pavement, Repaving

---

**Line Item:** 4.040

**Quantity:** Approximately 3,150 square yards at the parking area

**History:** Unknown

**Condition:** Fair overall with cracks and deterioration evident



**Asphalt pavement parking area overview**



**Parking area overview**  
**Note: Cracks and deterioration.**



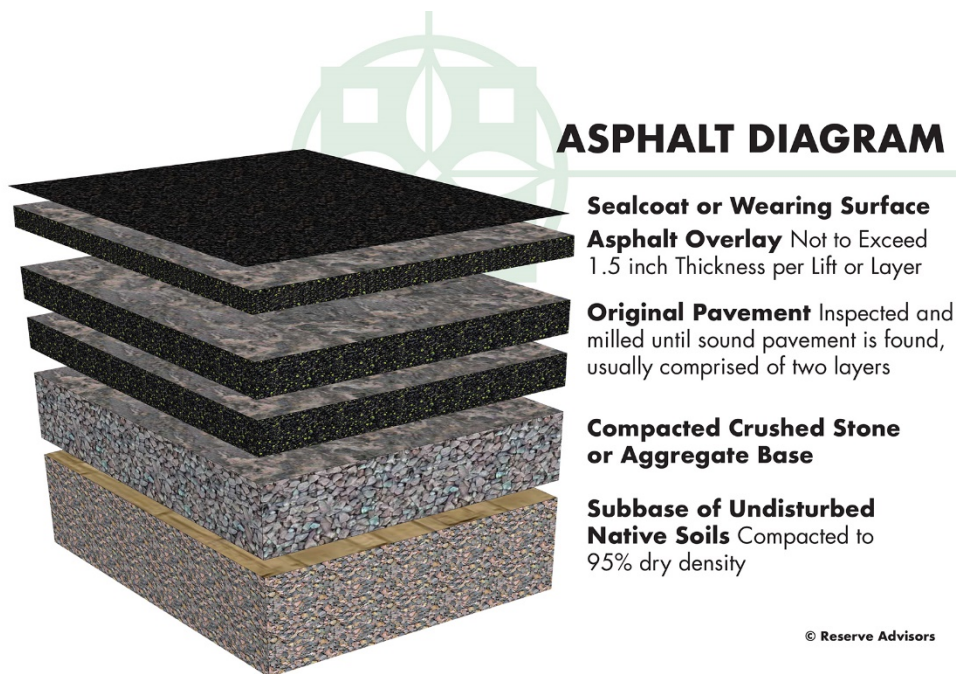
**Pavement cracks and deterioration**



**Pavement cracks and deterioration**

**Useful Life:** 15- to 20-years with the benefit of timely crack repairs and patching

**Component Detail Notes:** The initial installation of asphalt uses at least two lifts, or two separate applications of asphalt, over the base course. The first lift is the binder course. The second lift is the wearing course. The wearing course comprises a finer aggregate for a smoother more watertight finish. The following diagram depicts the typical components although it may not reflect the actual configuration at Antigua:



The manner of repaving is either a mill and overlay or total replacement. A mill and overlay is a method of repaving where cracked, worn and failed pavement is mechanically removed or milled until sound pavement is found. A new layer of asphalt is overlaid atop the remaining base course of pavement. Total replacement includes the removal of all existing asphalt down to the base course of aggregate and native soil followed by the

application of two or more new lifts of asphalt. We recommend mill and overlayment on asphalt pavement that exhibits normal deterioration and wear. We recommend total replacement of asphalt pavement that exhibits severe deterioration, inadequate drainage, pavement that has been overlaid multiple times in the past or where the configuration makes overlayment not possible. Based on the apparent visual condition and configuration of the asphalt pavement, we recommend the mill and overlay method of repaving followed by the total replacement method of repaving at Antigua.

**Priority/Criticality:** Defer only upon opinion of independent professional or engineer

**Expenditure Detail Notes:** Expenditure timing and costs are depicted in the **Reserve Expenditures** table in Section 3. Our cost for milling and overlayment includes area patching of up to ten percent (10%).

## Decks, Wood

---

**Line Item:** 4.105

**Quantity:** Two wood decks at the ground level of the building

**History:** Unknown; the Association plans to replace the decks in 2021.

**Condition:** Reported unsatisfactory



**Deck overview**



**Paint finish deterioration**

**Useful Life:** Up to 25 years with paint finishes applied every four- to six-years.

**Priority/Criticality:** Defer only upon opinion of independent professional or engineer

**Expenditure Detail Notes:** Expenditure timing and costs are depicted in the **Reserve Expenditures** table in Section 3. The estimate of cost is based on a contractor bid cost furnished by Management.

## Pool Elements



Pool area overview

### Concrete Deck

---

**Line Item:** 6.200

**Quantity:** 5,580 square feet

**History:** The deck was repaired in 2016 and coated in 2020

**Condition:** Fair overall with coating deterioration and cracks evident; we assume the 2020 coating and repair event remedied these deficiencies.



Pool deck overview



Pool deck overview and filled in structure



**Coating deterioration and cracks**

**Useful Life:** The useful life of a concrete pool deck is up to 60 years or more with timely repairs. We recommend the Association conduct inspections, partial replacements and repairs to the deck every 8- to 12-years in conjunction with coating replacements.

**Component Detail Notes:** We recommend the Association budget for the following:

- Selective cut out and replacements of up to ten percent (10%) of concrete
- Crack repairs as needed
- Mortar joint repairs
- Caulk replacement
- Coating replacement

**Priority/Criticality:** Defer only upon opinion of independent professional or engineer

**Expenditure Detail Notes:** Expenditure timing and costs are depicted in the **Reserve Expenditures** table in Section 3.

## **Fences, Vinyl and Aluminum**

---

**Line Item:** 6.400

**Quantity:** 340 linear feet

**History:** Installed in 2008

**Condition:** Good overall



**Vinyl fence overview**



**Aluminum fence section**

**Useful Life:** 15- to 20-years

**Priority/Criticality:** Not recommended to defer

**Expenditure Detail Notes:** Expenditure timing and costs are depicted in the **Reserve Expenditures** table in Section 3.

## **Mechanical Equipment**

---

**Line Items:** 6.600 and 6.601

**Quantity:** The mechanical equipment includes the following:

- Controls
- Filters
- Heaters
- Interconnected pipe, fittings and valves
- Pump

**History:** The heaters were replaced in the last five years, the pumps were replaced in 2012 and 2019.

**Condition:** Reported satisfactory



**Pool filters**



**Pump**



**Heaters**

**Useful Life:** Up to 15 years

**Priority/Criticality:** Defer only upon opinion of independent professional or engineer

**Expenditure Detail Notes:** Expenditure timing and costs are depicted in the **Reserve Expenditures** table in Section 3. Failure of the pool mechanical equipment as a single event is unlikely. Therefore, we include replacement of up to fifty percent (50%) of the equipment per event. We consider interim replacement of motors and minor repairs as normal maintenance.

## **Pool Finishes, Plaster and Tile**

---

**Line Items:** 6.800 and 6.801

**Quantity:** 1,320 square feet of plaster based on the horizontal surface area and approximately 130 linear feet of tile

**History:** The ages of the pool finishes are unknown.

**Condition:** We were unable to inspect the pool due to the cover. Management reports the pool finishes are in poor condition.

**Useful Life:** 8- to 12-years for the plaster and 15- to 25-years for the tile

**Component Detail Notes:** Removal and replacement provides the opportunity to inspect the pool structure and to allow for partial repairs of the underlying concrete surfaces as needed. To maintain the integrity of the pool structure, we recommend the Association budget for the following:

- Removal and replacement of the plaster finish
- Partial replacements of the scuppers and coping as needed
- Replacement of tiles as needed
- Replacement of joint sealants as needed
- Concrete structure repairs as needed

**Priority/Criticality:** Defer only upon opinion of independent professional or engineer

**Expenditure Detail Notes:** Expenditure timing and costs are depicted in the **Reserve Expenditures** table in Section 3. We recommend the Association budget for full tile replacement every other plaster replacement event.

## **Structure and Deck**

---

**Line Item:** 6.900

**Quantity:** 1,320 square feet of horizontal surface area

**History:** Original

**Conditions:** Visually appears in good condition. The concrete floors and walls have a plaster finish. This finish makes it difficult to thoroughly inspect the concrete structure during a noninvasive visual inspection.

**Useful Life:** Up to 60 years

**Component Detail Notes:** The need to replace a pool structure depends on the condition of the concrete structure, the condition of the embedded or concealed water circulation piping, possible long-term uneven settlement of the structure, and the increasing cost of repair and maintenance. Deterioration of any one of these component systems could result in complete replacement of the pool. For example, deferral of a deteriorated piping system could result in settlement and cracks in the pool structure. This mode of failure is more common as the system ages and deterioration of the piping system goes undetected. For reserve budgeting purposes, we recommend Antigua plan to replace the following components:

- Concrete deck
- Pool structure
- Subsurface piping



**Priority/Criticality:** Defer only upon opinion of independent professional or engineer

**Expenditure Detail Notes:** Expenditure timing and costs are depicted in the **Reserve Expenditures** table in Section 3.

## Reserve Study Update

An ongoing review by the Board and an Update of this Reserve Study 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. We recommend the Board budget for an Update to this Reserve Study in two-to three-years. 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.

Antigua 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 standards<sup>1</sup> set forth by the Association of Professional Reserve Analysts (APRA) fulfilling the requirements of a "Level I 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:

- The Cash Flow Method to compute, project and illustrate the 30-year Reserve Funding Plan
- Local<sup>2</sup> 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 Ocean City, Maryland at an annual inflation rate<sup>3</sup>. Isolated or regional markets of

<sup>1</sup> Identified in the APRA "Standards - Terms and Definitions" and the CAI "Terms and Definitions".

<sup>2</sup> See Credentials for additional information on our use of published sources of cost data.

<sup>3</sup> Derived from Marshall & Swift, historical costs and the Bureau of Labor Statistics.

greater construction (development) activity may experience slightly greater rates of inflation for both construction materials and labor.

- The past and current maintenance practices of Antigua and their effects on remaining useful lives
- Financial information provided by the Association pertaining to the cash status of the reserve fund and budgeted reserve contribution
- The anticipated effects of appreciation of the reserves over time in accord with a return or yield on investment of your cash equivalent assets. (We did not consider the costs, if any, of Federal and State Taxes on income derived from interest and/or dividend income).
- 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.

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



## 6. CREDENTIALS

### HISTORY AND DEPTH OF SERVICE

**Founded in 1991**, Reserve Advisors 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. 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.

**MATTHEW D. CASEY**  
**Responsible Advisor**

**CURRENT CLIENT SERVICES**

Matthew D. Casey, a Civil Engineer, is an Advisor for Reserve Advisors. Mr. Casey 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 condominiums, townhomes and homeowner associations.



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

**Cameron Station Community Association** Cameron Station Community Association is a planned unit development in Alexandria, Virginia which maintains common elements shared by 1,769 homeowners. The development contains over five miles of private roads and an extensive network of masonry paver walkways.

**Hudson Harbor I Condominium** Located along the Hudson River in Tarrytown, New York, this community was built in 2009 and contains a three-story midrise building comprising 20 residential units and three commercial units as well as 36 townhome style units in five buildings. Residents of the midrise enjoy terraces and covered balconies. Each of the townhomes has a large rooftop terrace.

**Old Farm Condominium, Inc.** A condominium style development in Frederick, Maryland, this community includes 144 units in 12 three-story buildings. This complex includes private balconies and shared stairwells at the entrances to the units.

**Bay Crossing Homeowners Association** An upscale homeowners association located in Lewes, Delaware comprised of 241 townhomes and single-family homes. Residents enjoy amenities such as a bocce court, pool and clubhouse. The site contains asphalt pavement streets and parking areas as well as four ponds.

**Palmer Landing** This gated condominium community contains 78 units in seven buildings and is located on Long Island Sound in Stamford, Connecticut. The development features hardwood balconies and detached garages. The site is supported by extensive seawalls.

**Ronald McDonald House Charities of Southern West Virginia** Located on the Elk River in Charleston, West Virginia, this Ronald McDonald House was constructed in 2016 and contains 14 guest suites, an office area, a manager's apartment and common areas.

**PRIOR RELEVANT EXPERIENCE**

Before joining Reserve Advisors, Mr. Casey attended the University of Connecticut in Storrs, Connecticut where he attained his Bachelor of Science degree in Civil Engineering. His studies focused on transportation engineering and environmental engineering. Mr. Casey also worked as an intern for Fay, Spofford and Thorndike Engineers where he took part in design of small municipal infrastructure projects in Connecticut and Massachusetts.

**EDUCATION**

University of Connecticut - B.S. Civil Engineering

**PROFESSIONAL AFFILIATIONS**

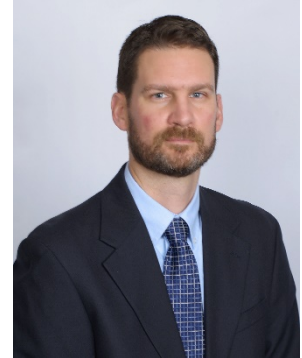
*Intern Engineer (I.E.)* – New York State Education Department

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

**CURRENT CLIENT SERVICES**

Alan M. Ebert, a Professional Engineer, is the 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 thousands 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, Illinois, Colorado

*Reserve Specialist (RS)* - Community Associations Institute

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



## RESOURCES

Reserve Advisors 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](http://www.iami.org).

**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](http://www.ashrae.org). Reserve Advisors 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](http://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](http://www.rsmeans.com).

Reserve Advisors' 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.

## 7. 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 Antigua 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) Antigua 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.



## 8. PROFESSIONAL SERVICE CONDITIONS

**Our Services** - Reserve Advisors, LLC (RA) performs its services as an independent contractor in accordance with our professional practice standards and its compensation is not contingent upon our conclusions. The purpose of our reserve study is to provide a budget planning tool that identifies the current status of the reserve fund, and an opinion recommending an annual funding plan to create reserves for anticipated future replacement expenditures of the property.

Our inspection and analysis of the subject property is limited to visual observations, is noninvasive and is not meant to nor does it include investigation into statutory, regulatory or code compliance. RA inspects sloped roofs from the ground and inspects 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 inspection. RA may note visible physical defects in our report. The inspection is made by employees generally familiar with real estate and building construction but in the absence of invasive testing RA cannot opine on, nor is RA responsible for, the structural integrity of the property including its conformity to specific governmental code requirements for fire, building, earthquake, and occupancy, or any physical defects that were not readily apparent during the inspection.

RA is not responsible for conditions that have changed between the time of inspection and the issuance of the report. RA does not investigate, nor assume any responsibility for any existence or impact of any hazardous materials, such as asbestos, urea-formaldehyde foam insulation, other chemicals, toxic wastes, environmental mold or other potentially hazardous materials or structural defects that are latent or hidden defects which may or may not be present on or within the property. RA does not make any soil analysis or geological study as part of its services; nor does RA investigate water, oil, gas, coal, or other subsurface mineral and use rights or such hidden conditions. RA assumes no responsibility for any such conditions. The Report contains opinions of estimated costs and remaining useful lives which are neither a guarantee of the actual costs of replacement nor a guarantee of remaining useful lives of any property element.

RA assumes, without independent verification, the accuracy of all data provided to it. You agree to indemnify and hold RA 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 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 director, officer, employee, affiliate, or agent of RA. Liability of RA 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** - RA completes the services in accordance with the Proposal. The Report represents a valid opinion of RA's findings and recommendations and is deemed complete. RA, however, considers any additional information made available to us within 6 months of issuing the Report if a timely request for a revised Report is made. RA retains the right to withhold a revised Report if payment for services was not tendered in a timely manner. All information received by RA and all files, work papers or documents developed by RA during the course of the engagement shall remain the property of RA and may be used for whatever purpose it sees fit.

**Your Obligations** - You agree to provide us access to the subject property for an on-site visual inspection. You agree to provide RA all available, historical and budgetary information, the governing documents, and other information that we request and deem necessary to complete the Report. You agree to pay actual attorneys' fees and any other costs incurred to collect on any unpaid balance for RA's services.

**Use of Our Report and Your Name** - Use of this Report is limited to only the purpose stated herein. You hereby acknowledge that any use or reliance by you on the Report for any unauthorized purpose is at your own risk and you shall hold RA harmless from any consequences of such use. Use by any unauthorized third party is unlawful. The Report in whole or in part **is not and cannot be used as a design specification for design engineering purposes or as an appraisal.** You may show our Report in its entirety to the following third parties: members of your organization, your accountant, attorney, financial institution and property manager who need to review the information contained herein. Without the written consent of RA, you shall not disclose the Report to any other third party. The Report contains intellectual property developed by RA and **shall not be reproduced or distributed to any party that conducts reserve studies without the written consent of RA.**

RA will include your name in our client lists. RA reserves the right to use property information to obtain estimates of replacement costs, useful life of property elements or otherwise as RA, in its sole discretion, deems appropriate.

**Payment Terms, Due Dates and Interest Charges** - Retainer payment is due upon authorization and prior to inspection. The balance is due net 30 days from the report shipment date. Any balance remaining 30 days after delivery of the Report shall accrue an interest charge of 1.5% per month. Any litigation necessary to collect an unpaid balance shall be venued in Milwaukee County Circuit Court for the State of Wisconsin.