

# **RESERVE STUDY**

## **Battlefield Green Community Association, Inc.**



**Mechanicsville, Virginia  
November 17, 2020**



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Battlefield Green Community Association, Inc.  
Mechanicsville, Virginia

Dear Board of Directors of Battlefield Green Community Association, Inc.:

At the direction of the Board that recognizes the need for proper reserve planning, we have conducted a *Reserve Study* of Battlefield Green Community Association, Inc. in Mechanicsville, Virginia and submit our findings in this report. The effective date of this study is the date of our visual, noninvasive inspection, November 17, 2020.

This *Reserve Study* exceeds the Association of Professional Reserve Analysts (APRA) standards fulfilling the requirements of a “Level II 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. We recommend the Board budget for an Update to this Reserve Study in two- to three-years. We look forward to continuing to help Battlefield Green Community Association, Inc. 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 December 14, 2020 by

*Reserve Advisors, LLC*

Visual Inspection and Report by: Justin B. Klein

Review by: Nicholas R. Julia

Alan M. Ebert, RS, 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:** Battlefield Green Community Association, Inc. (Battlefield Green)

**Location:** Mechanicsville, Virginia

**Reference:** 091509

**Property Basics:** Battlefield Green Community Association, Inc. is a homeowners association which is responsible for the common elements shared by 545 single family homes. The community was built in 1984.

**Reserve Components Identified:** 36 Reserve Components.

**Inspection Date:** November 17, 2020. We conducted the original inspection on June 2, 2016.

**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 2022 due to replacement of the playground equipment at the clubhouse and mill and overlayment of the asphalt pavement at the clubhouse; and in 2044 due to the replacement of the pool structure and deck.

**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.

## **Unaudited Cash Status of Reserve Fund:**

- \$152,343 as of August 31, 2020
- 2020 budgeted Reserve Contributions of \$67,400
- 2021 budgeted Reserve Contributions of \$80,100
- A potential deficit in reserves might occur by 2044 based upon continuation of the most recent annual reserve contribution of \$80,100 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 timber retaining walls along Old Cavalry Drive
- Mill and overlayment of the asphalt pavement at the clubhouse parking area
- Replacement of the light poles and fixtures at the entrance of the property
- Replacement of the playground equipment at the clubhouse
- Replacement of the pool cover
- Replacement of the light poles and fixtures at the pool deck and parking lot
- Replacement of the aluminum fence at the pool deck
- Replacement of the windows and doors at the clubhouse
- Replacement of the playground equipment at Dugout Terrace

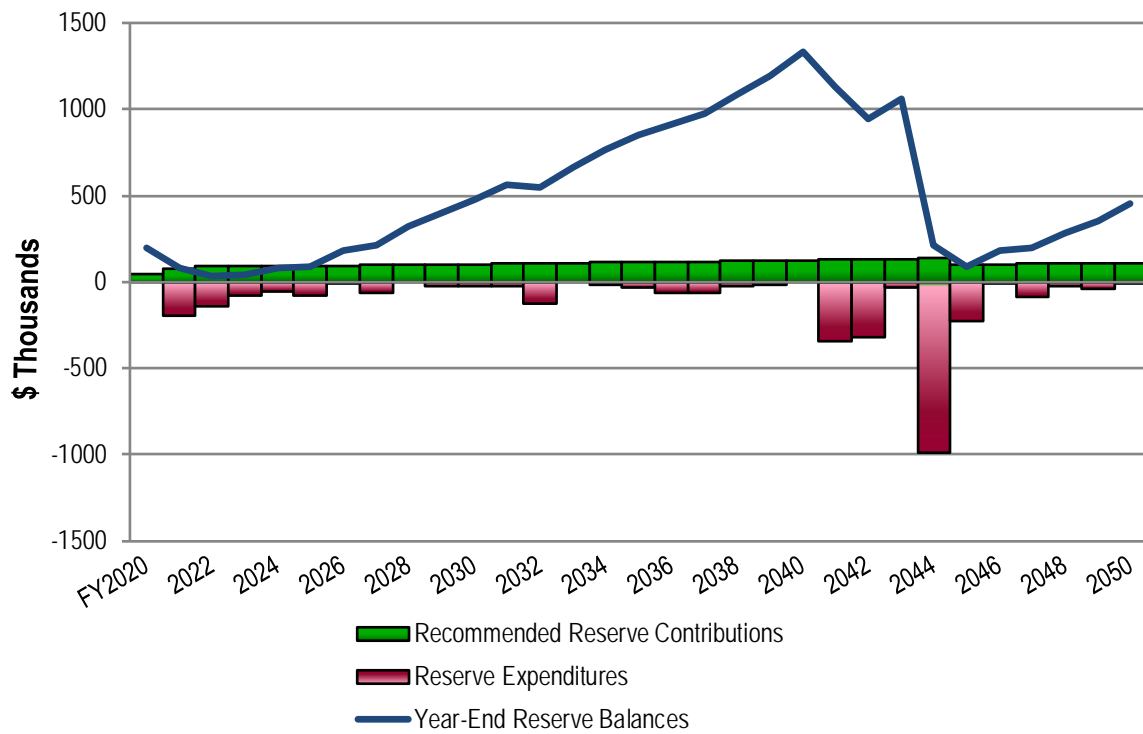


**Recommended Reserve Funding:** We recommend the following in order to achieve a stable and equitable Funding Plan:

- Increase to \$88,000 in 2022
- Inflationary increases from 2022 through 2044
- Decrease to \$100,000 by 2045 due to fully funding for replacement of pool structure
- Inflationary increases through 2050, the limit of this study's Cash Flow Analysis
- Initial recommended adjustment in Reserve Contributions of \$7,900 represents an average monthly increase of \$2.42 per homeowner and about a three percent (2.6%) adjustment in the 2021 total Operating Budget of \$308,420.

**Battlefield Green**  
Recommended Reserve Funding Table and Graph

Year	Reserve Contributions (\$)	Reserve Balances (\$)	Year	Reserve Contributions (\$)	Reserve Balances (\$)	Year	Reserve Contributions (\$)	Reserve Balances (\$)
2021	80,100 (Budgeted)	83,812	2031	105,200	560,318	2041	128,200	1,127,308
2022	88,000	31,406	2032	107,300	545,494	2042	130,800	946,281
2023	89,800	44,715	2033	109,400	660,296	2043	133,400	1,058,655
2024	91,600	77,104	2034	111,600	761,554	2044	136,100	208,669
2025	93,400	88,633	2035	113,800	852,978	2045	100,000	84,233
2026	95,300	180,448	2036	116,100	910,419	2046	102,000	180,449
2027	97,200	216,017	2037	118,400	973,652	2047	104,000	198,070
2028	99,100	317,507	2038	120,800	1,081,857	2048	106,100	278,449
2029	101,100	395,509	2039	123,200	1,195,154	2049	108,200	349,996
2030	103,100	474,145	2040	125,700	1,332,176	2050	110,400	456,465





## 2. RESERVE STUDY REPORT

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

**Battlefield Green Community Association, Inc.**

**Mechanicsville, Virginia**

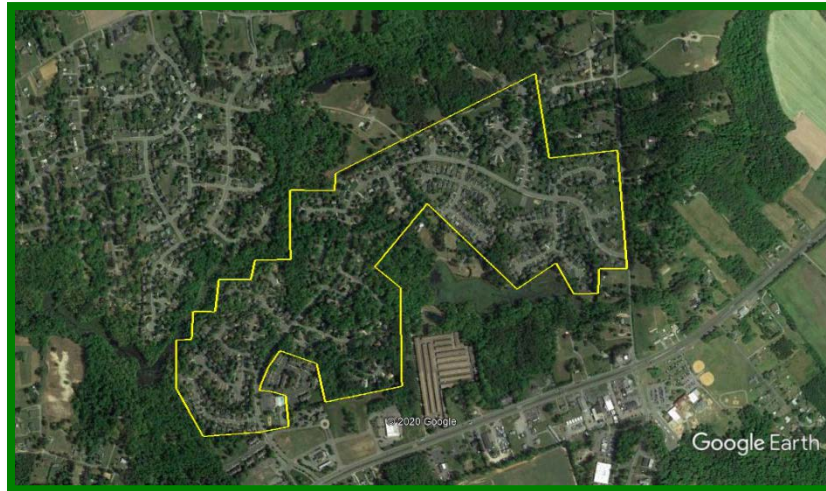
and submit our findings in this report. The effective date of this study is the date of our visual, noninvasive inspection, November 17, 2020. We conducted the original inspection on June 2, 2016.

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:

- Battlefield Green 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 the 30-year Reserve Expenditures at this time:

- Electrical Systems, Common
- Foundation, Common
- Pipes, Interior Building, Water and Sewer, Clubhouse
- Structural Frame, Clubhouse
- Vinyl Siding, Clubhouse (Portion replaced in 2016)
- Window, Kitchen (replaced in 2019)

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 \$3,000 (These relatively minor expenditures have a limited effect on the recommended Reserve Contributions.)
- Asphalt Pavement, Crack Repair and Patch, Dugout Terrace
- Fence, Wood, Trash Corral



**Trash corral overview**

- Irrigation System, Controls and Maintenance
- Landscape, General Maintenance
- Light Fixtures, Clubhouse, Exterior
- Paint Finishes, Miscellaneous, Touch Up
- Paint Finishes, Clubhouse, Touch Up, Interim
- Pipes, Subsurface Utilities
- Ponds, Detention and Retention, Maintenance

- Pool Deck, Pavers, Resetting and Partial Replacements, Interim



**Paver pool deck overview**

- Railings, Metal
- Retaining Walls, Landscape



**Landscape retaining walls**

- Security System, Cameras
- Signage
- Skylights, Repairs, Interim
- Staff, Storage and Service Areas
- Tennis Courts, Standards
- Walls, Concrete, Clubhouse, Inspections 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:

- Homes and Lots

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

- Fence, Vinyl, Privacy (Neighboring Association)



**Vinyl fence overview**

- Gazebo on Rolling Forest Circle (Neighboring Association)
- Street Systems (Hanover County)

### **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

Battlefield Green  
Community Association, Inc.  
Mechanicsville, Virginia

**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 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	15 2035
						Useful	Remaining	Unit (2020)	Per Phase (2020)	Total (2020)																	
<b>Exterior Clubhouse Elements</b>																											
1.280	32	32 Squares		Roof Assembly, Asphalt Shingles	2036	15 to 20	16	310.00	9,920	9,920	0.4%																
1.530	1,220	1,220 Square Feet		Roof, Thermoplastic (Incl. Skylights)	2036	15 to 20	16	13.25	16,165	16,165	0.7%																
1.860	1,250	1,250 Square Feet		Walls, Siding, Vinyl, Remaining Original	2024	to 40	4	4.50	5,625	5,625	0.2%				6,089												
1.980	730	730 Square Feet		Windows and Doors	2024	to 40	4	44.00	32,120	32,120	1.1%				34,768												
<b>Interior Clubhouse Elements</b>																											
2.450	2	1 Allowance		Furnishings, Phased	2032	to 25	12 to 24	11,000.00	11,000	22,000	1.0%														13,951		
2.500	1	1 Allowance		Interior, Renovation, Complete	2045	to 25	25	85,000.00	85,000	85,000	4.5%																
2.510	1	1 Each		Interior, Renovation, Partial	2032	8 to 12	12	13,000.00	13,000	13,000	0.5%														16,487		
<b>Clubhouse Services Elements</b>																											
3.070	2	2 Each		Air Handling and Condensing Units, Split Systems	2039	15 to 20	19	6,900.00	13,800	13,800	0.6%																
<b>Property Site Elements</b>																											
4.020	2,450	2,450 Square Yards		Asphalt Pavement, Clubhouse, Crack Repair, Patch and Seal Coat	2026	3 to 5	6	1.70	4,165	4,165	1.1%						4,690					5,077				5,496	
4.040	2,450	2,450 Square Yards		Asphalt Pavement, Clubhouse, Mill and Overlay	2022	15 to 20	2	15.00	36,750	36,750	1.2%			38,235													
4.045	2,450	2,450 Square Yards		Asphalt Pavement, Clubhouse, Total Replacement	2042	15 to 20	22	31.00	75,950	75,950	3.8%																
4.076	800	800 Square Yards		Asphalt Pavement, Dugout Terrace, Total Replacement	2036	15 to 20	16	28.00	22,400	22,400	1.0%																
4.110	600	90 Linear Feet		Concrete Curbs and Gutters, Partial	2025	to 65	5 to 30+	35.50	3,195	21,300	0.4%						3,528										
4.140	21,600	1,730 Square Feet		Concrete Sidewalks, Partial	2025	to 65	5 to 30+	11.00	19,030	237,600	4.3%						21,011						23,661				
4.260	560	560 Linear Feet		Fence, Vinyl	2024	15 to 20	4	16.00	8,960	8,960	0.8%				9,699												
4.559	9	9 Each		Light Poles and Fixtures, Landscape	2041	to 25	21	1,500.00	13,500	13,500	0.7%																
4.560	5	5 Each		Light Poles and Fixtures, Parking Lot and Pool	2023	to 25	3	3,200.00	16,000	16,000	1.4%				16,979												
4.561	8	8 Each		Light Poles and Fixtures, Old Calvalry Dr. Entrance	2022	to 25	2	1,800.00	14,400	14,400	1.3%				14,982												
4.660	1	1 Allowance		Playground Equipment, Clubhouse	2022	15 to 20	2	58,000.00	58,000	58,000	4.8%				60,343												
4.662	1	1 Allowance		Playground Equipment, Dugout Terrace	2025	15 to 20	5	43,000.00	43,000	43,000	3.8%						47,475										
4.760	1,440	1,440 Square Feet		Retaining Walls, Timber (Replace with Masonry)	2021	15 to 20	1	133.00	191,520	191,520	15.5%		195,350														
4.777	1	1 Allowance		Roof, Metal, Pavilion	2032	to 30	12	18,500.00	18,500	18,500	0.7%													23,462			
4.800	2	1 Allowance		Signage, Entrance Monuments, Renovation, Phased	2024	15 to 20	4 to 14	8,500.00	8,500	17,000	1.1%					9,201											11,216
4.820	1	1 Allowance		Site Furniture	2025	15 to 25	5	9,600.00	9,600	9,600	0.8%						10,599										
4.830	800	800 Square Yards		Tennis Court, Clubhouse, Color Coat	2022	4 to 6	2	9.50	7,600	7,600	1.7%				7,907									9,639			
4.840	360	360 Linear Feet		Tennis Court, Clubhouse, Fence	2027	to 25	7	40.00	14,400	14,400	0.5%									16,541							
4.861	800	800 Square Yards		Tennis Court, Clubhouse, Surface Replacement	2027	to 25	7	41.50	33,200	33,200	1.2%									38,136							
4.863	800	800 Square Yards		Tennis Court, Dugout Terrace, Color Coat	2022	4 to 6	2	9.50	7,600	7,600	1.6%				7,907				8,730				9,639				
4.864	600	600 Linear Feet		Tennis Court, Dugout Terrace, Fence	2042	to 25	22	40.00	24,000	24,000	1.2%																
4.866	800	800 Square Yards		Tennis Court, Dugout Terrace, Surface Replacement	2042	to 25	22	41.50	33,200	33,200	1.6%																
<b>Pool Elements</b>																											
6.300	3,700	3,700 Square Feet		Cover, Vinyl	2022	6 to 8	2	3.00	11,100	11,100	1.9%				11,548								13,531				
6.400	480	480 Linear Feet		Fence, Aluminum	2023	to 25	3	55.00	26,400	26,400	0.9%				28,016												

## RESERVE EXPENDITURES

Battlefield Green  
Community Association, Inc.  
Mechanicsville, Virginia

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)																	
<u>Exterior Clubhouse Elements</u>																											
1.280	32	32	Squares	Roof Assembly, Asphalt Shingles	2036	15 to 20	16	310.00	9,920	9,920	0.4%	13,618															
1.530	1,220	1,220	Square Feet	Roof, Thermoplastic (Incl. Skylights)	2036	15 to 20	16	13.25	16,165	16,165	0.7%	22,191															
1.860	1,250	1,250	Square Feet	Walls, Siding, Vinyl, Remaining Original	2024	to 40	4	4.50	5,625	5,625	0.2%																
1.980	730	730	Square Feet	Windows and Doors	2024	to 40	4	44.00	32,120	32,120	1.1%																
<u>Interior Clubhouse Elements</u>																											
2.450	2	1	Allowance	Furnishings, Phased	2032	to 25	12 to 24	11,000.00	11,000	22,000	1.0%									17,693							
2.500	1	1	Allowance	Interior, Renovation, Complete	2045	to 25	25	85,000.00	85,000	85,000	4.5%										139,452						
2.510	1	1	Each	Interior, Renovation, Partial	2032	8 to 12	12	13,000.00	13,000	13,000	0.5%																
<u>Clubhouse Services Elements</u>																											
3.070	2	2	Each	Air Handling and Condensing Units, Split Systems	2039	15 to 20	19	6,900.00	13,800	13,800	0.6%				20,104												
<u>Property Site Elements</u>																											
4.020	2,450	2,450	Square Yards	Asphalt Pavement, Clubhouse, Crack Repair, Patch and Seal Coat	2026	3 to 5	6	1.70	4,165	4,165	1.1%			5,949						6,970						7,544	
4.040	2,450	2,450	Square Yards	Asphalt Pavement, Clubhouse, Mill and Overlay	2022	15 to 20	2	15.00	36,750	36,750	1.2%																
4.045	2,450	2,450	Square Yards	Asphalt Pavement, Clubhouse, Total Replacement	2042	15 to 20	22	31.00	75,950	75,950	3.8%							117,417									
4.076	800	800	Square Yards	Asphalt Pavement, Dugout Terrace, Total Replacement	2036	15 to 20	16	28.00	22,400	22,400	1.0%	30,750															
4.110	600	90	Linear Feet	Concrete Curbs and Gutters, Partial	2025	to 65	5 to 30+	35.50	3,195	21,300	0.4%		4,474												5,674		
4.140	21,600	1,730	Square Feet	Concrete Sidewalks, Partial	2025	to 65	5 to 30+	11.00	19,030	237,600	4.3%		26,647					30,008							33,794		
4.260	560	560	Linear Feet	Fence, Vinyl	2024	15 to 20	4	16.00	8,960	8,960	0.8%							13,852									
4.559	9	9	Each	Light Poles and Fixtures, Landscape	2041	to 25	21	1,500.00	13,500	13,500	0.7%						20,461										
4.560	5	5	Each	Light Poles and Fixtures, Parking Lot and Pool	2023	to 25	3	3,200.00	16,000	16,000	1.4%														27,856		
4.561	8	8	Each	Light Poles and Fixtures, Old Calvalry Dr. Entrance	2022	to 25	2	1,800.00	14,400	14,400	1.3%														24,579		
4.660	1	1	Allowance	Playground Equipment, Clubhouse	2022	15 to 20	2	58,000.00	58,000	58,000	4.8%							89,667									
4.662	1	1	Allowance	Playground Equipment, Dugout Terrace	2025	15 to 20	5	43,000.00	43,000	43,000	3.8%														70,546		
4.760	1,440	1,440	Square Feet	Retaining Walls, Timber (Replace with Masonry)	2021	15 to 20	1	133.00	191,520	191,520	15.5%						290,280										
4.777	1	1	Allowance	Roof, Metal, Pavilion	2032	to 30	12	18,500.00	18,500	18,500	0.7%																
4.800	2	1	Allowance	Signage, Entrance Monuments, Renovation, Phased	2024	15 to 20	4 to 14	8,500.00	8,500	17,000	1.1%														13,672		
4.820	1	1	Allowance	Site Furniture	2025	15 to 25	5	9,600.00	9,600	9,600	0.8%														15,750		
4.830	800	800	Square Yards	Tennis Court, Clubhouse, Color Coat	2022	4 to 6	2	9.50	7,600	7,600	1.7%		10,642					11,749							12,972		
4.840	360	360	Linear Feet	Tennis Court, Clubhouse, Fence	2027	to 25	7	40.00	14,400	14,400	0.5%																
4.861	800	800	Square Yards	Tennis Court, Clubhouse, Surface Replacement	2027	to 25	7	41.50	33,200	33,200	1.2%																
4.863	800	800	Square Yards	Tennis Court, Dugout Terrace, Color Coat	2022	4 to 6	2	9.50	7,600	7,600	1.6%		10,642												12,972		
4.864	600	600	Linear Feet	Tennis Court, Dugout Terrace, Fence	2042	to 25	22	40.00	24,000	24,000	1.2%														37,104		
4.866	800	800	Square Yards	Tennis Court, Dugout Terrace, Surface Replacement	2042	to 25	22	41.50	33,200	33,200	1.6%														51,327		
<u>Pool Elements</u>																											
6.300	3,700	3,700	Square Feet	Cover, Vinyl	2022	6 to 8	2	3.00	11,100	11,100	1.9%			15,854											17,854		
6.400	480	480	Linear Feet	Fence, Aluminum	2023	to 25	3	55.00	26,400	26,400	0.9%																

## RESERVE EXPENDITURES

Battlefield Green  
Community Association, Inc.  
Mechanicsville, Virginia

**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 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	15 2035	
						Useful	Remaining	Unit (2020)	Per Phase (2020)	Total (2020)																		
6.500	2	1	Allowance	Furniture, Phased	2023	to 12	3 to 9	22,000.00	22,000	44,000	4.8%																	29,609
6.600	2	1	Allowance	Mechanical Equipment, Phased	2023	to 15	3 to 10	8,000.00	8,000	16,000	1.4%				8,490							9,752						
6.800	3,400	3,400	Square Feet	Pool Finish, Plaster	2032	8 to 12	12	12.50	42,500	42,500	1.7%																53,900	
6.900	3,400	3,400	Square Feet	Structure and Deck, Total Replacement	2044	to 60	24	170.00	578,000	578,000	29.7%																	
<b>Anticipated Expenditures, By Year (\$3,129,990 over 30 years)</b>												0	195,350	140,922	76,832	59,757	82,613	4,690	63,407	0	26,292	28,360	23,661	127,078	0	16,712	29,609	



## RESERVE EXPENDITURES

Battlefield Green  
Community Association, Inc.  
Mechanicsville, Virginia

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
6.500	2	1	Allowance	Furniture, Phased	2023	to 12	3 to 9	22,000.00	22,000	44,000	4.8%						33,345						37,552			
6.600	2	1	Allowance	Mechanical Equipment, Phased	2023	to 15	3 to 10	8,000.00	8,000	16,000	1.4%		11,202							12,867						
6.800	3,400	3,400	Square Feet	Pool Finish, Plaster	2032	8 to 12	12	12.50	42,500	42,500	1.7%															
6.900	3,400	3,400	Square Feet	Structure and Deck, Total Replacement	2044	to 60	24	170.00	578,000	578,000	29.7%									929,677						
<b>Anticipated Expenditures, By Year (\$3,129,990 over 30 years)</b>												66,559	63,607	21,803	20,104	0	344,086	321,116	30,008	991,763	225,748	6,970	88,075	27,856	39,468	7,544

# RESERVE FUNDING PLAN

## CASH FLOW ANALYSIS

Battlefield Green  
Community Association, Inc.  
Mechanicsville, Virginia

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

		FY2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Reserves at Beginning of Year	<i>(Note 1)</i>	152,343	197,800	83,812	31,406	44,715	77,104	88,633	180,448	216,017	317,507	395,509	474,145	560,318	545,494	660,296	761,554
Total Recommended Reserve Contributions	<i>(Note 2)</i>	44,933	80,100	88,000	89,800	91,600	93,400	95,300	97,200	99,100	101,100	103,100	105,200	107,300	109,400	111,600	113,800
Estimated Interest Earned, During Year	<i>(Note 3)</i>	524	1,262	516	341	546	742	1,205	1,776	2,390	3,194	3,896	4,634	4,954	5,402	6,370	7,233
Anticipated Expenditures, By Year		0	(195,350)	(140,922)	(76,832)	(59,757)	(82,613)	(4,690)	(63,407)	0	(26,292)	(28,360)	(23,661)	(127,078)	0	(16,712)	(29,609)
Anticipated Reserves at Year End		<u>\$197,800</u>	<u>\$83,812</u>	<u>\$31,406</u>	<u>\$44,715</u>	<u>\$77,104</u>	<u>\$88,633</u>	<u>\$180,448</u>	<u>\$216,017</u>	<u>\$317,507</u>	<u>\$395,509</u>	<u>\$474,145</u>	<u>\$560,318</u>	<u>\$545,494</u>	<u>\$660,296</u>	<u>\$761,554</u>	<u>\$852,978</u>
Predicted Reserves based on 2021 funding level of:	\$80,100	197,800	83,812	23,471	26,965	47,642	45,546	121,705	139,568	221,285	277,327	331,796	391,475	347,809	431,400	498,956	554,165

*(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
Reserves at Beginning of Year		852,978	910,419	973,652	1,081,857	1,195,154	1,332,176	1,127,308	946,281	1,058,655	208,669	84,233	180,449	198,070	278,449	349,996
Total Recommended Reserve Contributions		116,100	118,400	120,800	123,200	125,700	128,200	130,800	133,400	136,100	100,000	102,000	104,000	106,100	108,200	110,400
Estimated Interest Earned, During Year		7,900	8,440	9,208	10,201	11,322	11,018	9,289	8,982	5,677	1,312	1,186	1,696	2,135	2,815	3,613
Anticipated Expenditures, By Year		(66,559)	(63,607)	(21,803)	(20,104)	0	(344,086)	(321,116)	(30,008)	(991,763)	(225,748)	(6,970)	(88,075)	(27,856)	(39,468)	(7,544)
Anticipated Reserves at Year End		<u>\$910,419</u>	<u>\$973,652</u>	<u>\$1,081,857</u>	<u>\$1,195,154</u>	<u>\$1,332,176</u>	<u>\$1,127,308</u>	<u>\$946,281</u>	<u>\$1,058,655</u>	<u>\$208,669</u>	<u>\$84,233</u>	<u>\$180,449</u>	<u>\$198,070</u>	<u>\$278,449</u>	<u>\$349,996</u>	<u>\$456,465</u>
Predicted Reserves based on 2020 funding level of:	\$80,100	572,754	594,476	658,386	724,577	811,559	553,689	316,572	369,739	(542,699)	(693,887)					

*(NOTE 5)*

*(NOTE 4)*

### Explanatory Notes:

- 1) Year 2020 starting reserves are as of August 31, 2020; FY2020 starts January 1, 2020 and ends December 31, 2020.
- 2) Reserve Contributions for 2020 are the remaining budgeted 4 months; 2021 is budgeted; 2022 is the first year of recommended contributions.
- 3) 0.9% is the estimated annual rate of return on invested reserves; 2020 is a partial year of interest earned.
- 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****Battlefield Green  
Community Association, Inc.**

Mechanicsville, Virginia

Line Item	Reserve Component Inventory	RUL = 0 FY2020	1 2021	2 2022	3 2023	4 2024	5 2025
<b><u>Exterior Clubhouse Elements</u></b>							
1.860	Walls, Siding, Vinyl, Remaining Original					6,089	
1.980	Windows and Doors					34,768	
<b><u>Property Site Elements</u></b>							
4.040	Asphalt Pavement, Clubhouse, Mill and Overlay			38,235			
4.110	Concrete Curbs and Gutters, Partial						3,528
4.140	Concrete Sidewalks, Partial						21,011
4.260	Fence, Vinyl					9,699	
4.560	Light Poles and Fixtures, Parking Lot and Pool				16,979		
4.561	Light Poles and Fixtures, Old Calvalry Dr. Entrance			14,982			
4.660	Playground Equipment, Clubhouse			60,343			
4.662	Playground Equipment, Dugout Terrace						47,475
4.760	Retaining Walls, Timber (Replace with Masonry)		195,350				
4.800	Signage, Entrance Monuments, Renovation, Phased					9,201	
4.820	Site Furniture						10,599
4.830	Tennis Court, Clubhouse, Color Coat			7,907			
4.863	Tennis Court, Dugout Terrace, Color Coat			7,907			
<b><u>Pool Elements</u></b>							
6.300	Cover, Vinyl			11,548			
6.400	Fence, Aluminum				28,016		
6.500	Furniture, Phased				23,347		
6.600	Mechanical Equipment, Phased				8,490		
<b>Anticipated Expenditures, By Year (\$3,129,990 over 30 years)</b>		<b>0</b>	<b>195,350</b>	<b>140,922</b>	<b>76,832</b>	<b>59,757</b>	<b>82,613</b>

## 4. RESERVE COMPONENT DETAIL

The Reserve Component Detail of this *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 Clubhouse Elements



Clubhouse rear elevation overview

### Roof Assembly, Asphalt Shingles

---

**Line Item:** 1.280

**Quantity:** Approximately 32 *squares*<sup>1</sup> at the clubhouse

**History:** A portion of the asphalt shingle roof was replaced in 2016 and the remaining shingles were replaced in 2020.

**Condition:** Good overall based from our visual inspection from the ground. Management does not report a history of leaks.

<sup>1</sup> We quantify the roof area in squares where one square is equal to 100 square feet of surface area.



**Asphalt shingle roof overview**



**Asphalt shingle roof overview**



**Gutter and downspout overview**

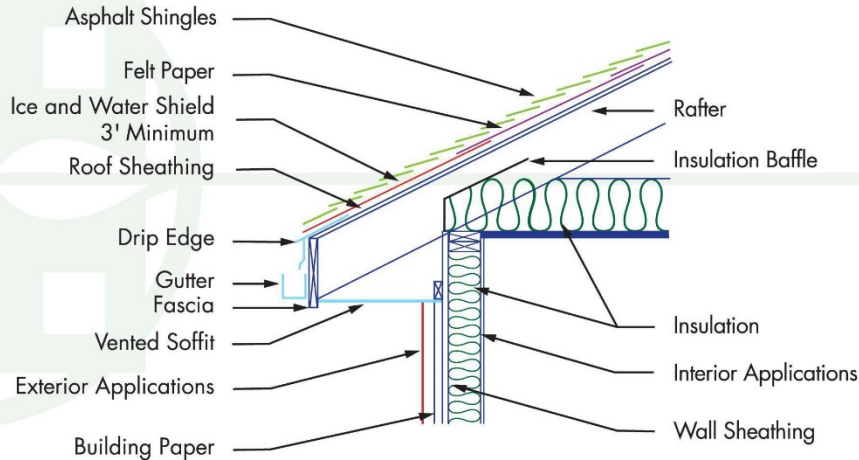
**Useful Life:** 15- to 20-years

**Component Detail Notes:** The existing roof assembly comprises the following:

- Laminate shingles
- Boston style ridge caps
- Rubber seal with plastic base boot flashing at waste pipes
- Metal drip edge

The following cross-sectional schematic illustrates a typical asphalt shingle roof system although it may not reflect the actual configuration at Battlefield Green:

## ROOF SCHEMATIC



© Reserve Advisors

Contractors use one of two methods for replacement of sloped roofs, either an overlayment or a tear-off. Overlayment is the application of new shingles over an existing roof. However, there are many disadvantages to overlayment including hidden defects of the underlying roof system, absorption of more heat resulting in accelerated deterioration of the new and old shingles, and an uneven visual appearance. Therefore, we recommend only the tear-off method of replacement. The tear-off method of replacement includes removal of the existing shingles, flashings if required and underlayments.

The Association should plan to coordinate the replacement of gutters and downspouts with the adjacent roofs. This will result in the most economical unit price and minimize the possibility of damage to other roof components as compared to separate replacements.

**Preventative Maintenance Notes:** We recommend the Association maintain a service and inspection contract with a qualified professional and record all documentation of repairs conducted. We note the following select recommended preventative maintenance activities to maximize the remaining useful life:

- Annually:
  - Record any areas of water infiltration, flashing deterioration, damage or loose shingles
  - Inspect for ice dams and implement repairs as needed if issues are reoccurring
  - Trim tree branches that are near or in contact with roof
- As-needed:

- Ensure proper ventilation and verify vents are clear of debris and not blocked from attic insulation

**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 and timing is based, in part, by information provided by Management.

## Roof, Thermoplastic

---

**Line Item:** 1.530

**Quantity:** 1,220 square feet above the pool rest rooms and includes seven skylights

**History:** The Association installed the thermoplastic roof in 2016; the Association should conduct inspections of the roof semiannually and fund these inspections through the operating budget.

**Condition:** Good to fair overall with standing water evident. Management does not report a history of leaks.



**Thermoplastic roof overview – Note: standing water**



**Skylight overview**

**Useful Life:** 15- to 20-years. Skylights have a useful life of up to 20 years.

**Component Detail Notes:** Thermoplastic roofs include the following:

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

The following characteristics define most thermoplastic roofs:

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

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

Contractors can install a new thermoplastic roof in one of two ways: *tear-off* or an *overlay*. An *overlay* is the application of a new roof membrane over an existing roof. This method, although initially more economical, often covers up problems with the deck, flashing and saturated insulation. The *tear-off* method of replacement includes removal of the existing roofing, flashings and insulation, and installation of a new roofing system.

The contractor should follow the manufacturer's directions and specifications upon installation of the roof. The contractor should remove the original insulation if saturated or compacted and apply a new layer of insulation per the manufacturer's instructions. The insulation should fit loosely with gaps no greater than ¼ inch. Gaps will cause failure of the membrane later. Mechanical fastening of the insulation is the best manner of installation.

Skylights have considerably shorter lives when compared to windows and doors of similar construction due to an increased exposure to weather elements. Snow drifts and wind driven rains cause excessive wear to the seals and frames. Failed seals or glass are common occurrences as the skylights age and approach the end of their useful lives.

**Preventative Maintenance Notes:** We recommend the Association maintain a service and inspection contract with a qualified professional and record all documentation of repairs conducted. We note the following select recommended preventative maintenance activities to maximize the remaining useful life:

- Annually at the skylights:
  - Inspect and repair flashing damage and perimeter sealant
  - Verify no signs of water infiltration or frame damage



- Semi-annually:
  - Note drainage issues with water ponding after 48 hours of rainfall event. Verify scuppers and drains are free of debris. Replace damaged or missing drain covers.
  - Inspect perimeter flashing for loose fasteners, deflections, and sealant damage
  - Verify membrane surface is free of ruptures or damage, and areas of extensive blistering or bubbling
  - Remove oil spills or contaminants from mechanical equipment
  - In areas of possible foot traffic, remove any sharp debris or trash and note areas of crushed insulation
  - If frequency of leaks increase or location of water infiltration is unknown, we recommend the consideration of a thermal image inspection

**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 Association should fund for interim repairs and replacement of the skylights through the operating budget.

## Walls, Siding, Vinyl

---

**Line Item:** 1.860

**Quantity:** Approximately 3,750 square feet of the exterior walls including soffit and fascia

**History:** Approximately 2,500 square feet of vinyl siding was replaced in 2016. The remaining 1,250 square feet is original.

**Condition:** The replaced vinyl siding is in good overall condition. The original vinyl is in fair overall condition.



Vinyl siding overview



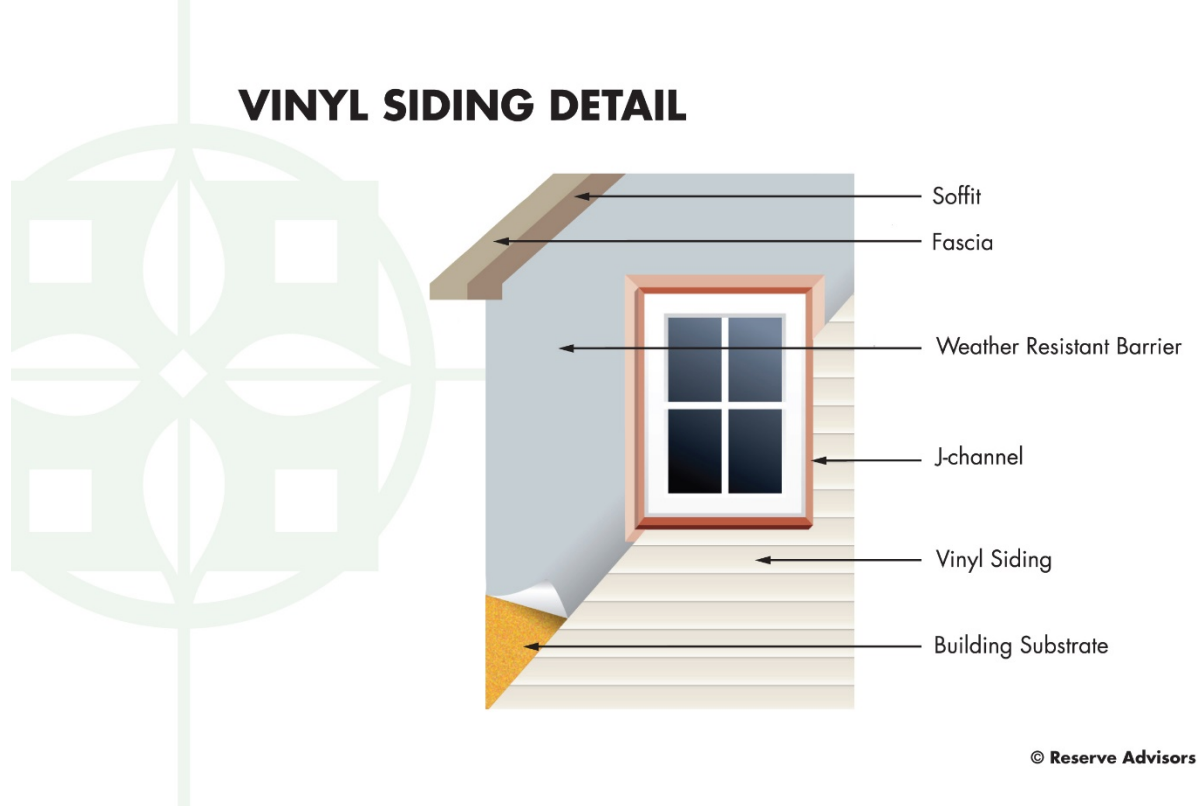
Vinyl siding overview

**Useful Life:** Up to 40 years

**Component Detail Notes:** The siding at Battlefield Green consists of the following:

- J-channel trim at window and door perimeters, and other penetrations
- Water-vapor permeable building paper protects the buildings

The following diagram details the use of building wrap in a vinyl siding system:



The Association should install new vinyl siding as recommended by the *Vinyl Institute, Inc.* The vinyl siding should be installed over a continuous weather resistant barrier and properly integrated flashing around all penetrations. Fasteners used should include aluminum, galvanized steel or other corrosion-resistant fasteners. Siding panels should overlap by approximately one inch. Joints should be staggered so that no two courses are aligned vertically, unless separated by at least three courses. The siding should not be caulked where the siding meets trim accessories, such as J-channel, or at overlap joints. J-channel should be installed a minimum of ½ inch off rooflines.

Consideration of appearance and development of issues largely governs the decision to replace, in whole or partially, prior to the end of its useful life. Maintenance and partial replacements of the siding may extend the useful life. Normal deterioration mainly relates to discoloration of the exterior finish from exposure to sunlight, weathering and air pollutants. Loosening of the fasteners also contributes to the possible need for premature replacement.

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

- Annually:
  - Inspect and repair loose siding, warping or damage from wind driven objects or lawn care equipment
  - Periodically clean siding as necessary at areas of organic growth. A non-abrasive household cleaner or manufacturer specified vinyl siding cleaner will remove more intense stains. We do not recommend pressure cleaning at vinyl siding due to the siding's brittle nature.

**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.

## Windows and Doors

---

**Line Item:** 1.980

**Quantity:** 750 square feet

**History:** Approximately 20 square feet of windows in the kitchen were replaced in 2019. The remaining 730 square feet of windows and doors are original.

**Condition:** Reported satisfactory



**Window and door overview**

**Useful Life:** Up to 40 years

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

- Annually:
  - Inspect and repair loose weather stripping and/or lock damage
  - Inspect for broken glass and damaged screens

- Record instances of water infiltration, trapped moisture or leaks

**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 Clubhouse Elements

### Furnishings

---

**Line Item:** 2.450

**Quantity:** Furnishings and components in the clubhouse include but are not limited to the following elements:

- Bureau
- Chairs
- Electric fireplace
- Folding chairs
- Folding tables
- Ice Machine
- Microwave
- Oven
- Refrigerator
- Sofas
- Stereo system
- Tables
- Television

**History:** The Association replaced the furnishings at the clubhouse in 2019.

**Condition:** Good overall



Furnishings overview



Furnishings overview

**Useful Life:** Varies significantly 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. Due to varied uses, ages and useful lives, we recommend the Association budget \$11,000 plus inflation for phased replacements of up to fifty percent (50%) of the furnishings per event.

## Interior Renovations

---

**Line Items:** 2.500 and 2.510

**Quantity:** The components of the clubhouse interior include:

- Vinyl plank and carpet floor coverings
- Paint finishes on the walls and a portion of the ceilings
- Acoustical ceiling tiles on a portion of the ceilings
- Plumbing fixtures
- Light fixtures including exit and emergency lights
- Kitchen cabinets and countertops
- Rest room countertops
- Partitions
- Sinks
- Security System, Cameras
- Toilets

**History:** The Association renovated the clubhouse interior in 2019.

**Condition:** Good overall



**Clubhouse interior overview**



**Clubhouse interior overview**



**Clubhouse interior overview**



**Clubhouse restroom interior overview**



**Rest room overview**



**Rest room overview**



**Security camera overview**



**Emergency fixtures overview**

**Useful Life:** Complete interior renovation up to every 25 years and partial interior renovations every 12 years

**Priority/Criticality:** Per Board discretion

**Expenditure Detail Notes:** Expenditure timing and costs are depicted in the **Reserve Expenditures** table in Section 3. Our estimate for cost and timing is based on information provided by Management. The complete renovation should include paint finishes replacement of all the interior components listed above and the partial renovations should include the following:

- Application of paint finish to all surfaces
- Replacement of the carpet
- Partial replacement of security cameras
- Partial replacement of exit, emergency lights, and smoke detectors

## **Clubhouse Services Elements**

### **Air Handling and Condensing Units, Split Systems**

---

**Line Item:** 3.070

**Quantity:** Two Carrier split systems

**History:** Replaced in 2019

**Condition:** Reported satisfactory without operational deficiencies

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

**Component Detail Notes:** A split system air conditioner consists of an outside condensing unit, an interior evaporator coil, refrigerant lines and an interior electric air handling unit. Each condensing unit has a cooling capacity of five-tons. The split systems use R-410A refrigerant.

**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:

- Semi-annually:
  - Lubricate motors and bearings
  - Change or clean air filters as needed
  - Inspect condenser base and piping insulation
  - Inspect base pan, coil, cabinet and clear obstructions as necessary
- Annually:
  - Clean coils and drain pans, clean fan assembly, check refrigerant charge, inspect fan drive system and controls
  - Inspect and clean accessible ductwork as needed
  - Clean debris from inside cabinet, inspect condenser compressor and associated tubing for damage



**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. Our estimate of cost is based on information provided by Management.

## Property Site Elements

### Asphalt Pavement, Crack Repair, Patch and Seal Coat

---

**Line Item:** 4.020

**Quantity:** Approximately 2,450 square yards at the clubhouse parking area

**History:** Unknown age

**Condition:** The asphalt pavement at the clubhouse is fair to poor overall with raveling and cracks evident. The asphalt pavement at Dugout Terrace is good overall with isolated cracks evident.

**Useful Life:** Three- to five-years

**Component Detail Notes:** Proposals for seal coat applications should include crack repairs and patching. The contractor should only apply seal coat applications after repairs are completed. A seal coat does not bridge or close cracks; therefore, unrepaired cracks render the seal coat applications useless.

**Priority/Criticality:** Per Board discretion

**Expenditure Detail Notes:** Expenditure timing and costs are depicted in the **Reserve Expenditures** table in Section 3. Our cost includes an allowance for crack repairs and patching of up to two percent (2%) of the pavement.

### Asphalt Pavement, Repaving

---

**Line Items:** 4.040, 4.045 and 4.070

**Quantity:** Approximately 3,250 square yards including the clubhouse parking area and the area at Dugout Terrace

**History:** Unknown age



**Condition:** The asphalt pavement at the clubhouse is fair to poor overall with raveling and cracks evident. The asphalt pavement at Dugout Terrace is good overall with isolated cracks evident.



**Asphalt pavement overview**



**Asphalt pavement overview – Note: raveling**



**Asphalt pavement overview**



**Asphalt pavement crack**



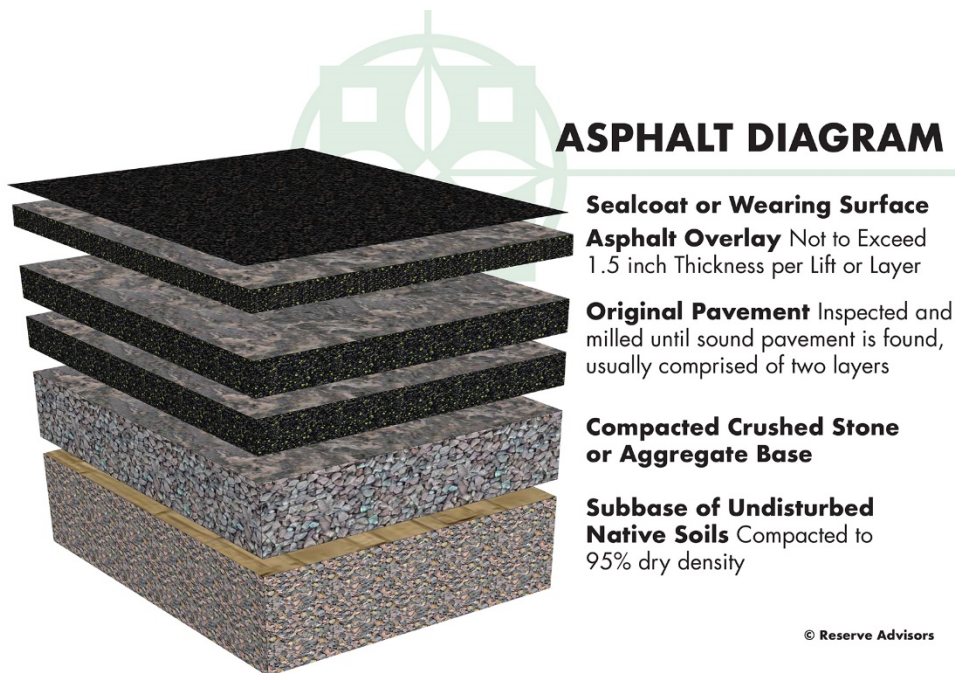
**Dugout Terrace asphalt pavement court**



**Crack at Dugout Terrace**

**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 Battlefield Green:



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 for initial repaving followed by the total replacement method for subsequent repaving at the clubhouse parking area. We recommend the total replacement method of repaving for Dugout Terrace.

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

- Annually:
  - Inspect for settlement, large cracks and trip hazards, and ensure proper drainage
  - Repair areas which could cause vehicular damage such as potholes
- As needed:
  - Perform crack repairs and patching 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 milling and overlayment includes area patching of up to ten percent (10%).

## **Concrete Curbs and Gutters**

---

**Line Item:** 4.110

**Quantity:** Approximately 600 linear feet at the clubhouse

**Condition:** Good to fair overall with scaling evident



**Concrete curb overview**



**Recently replaced section**



**Scaling**

**Useful Life:** Up to 65 years although interim deterioration of areas is common

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

- Annually:
  - Inspect and repair major cracks, spalls and trip hazards
  - Mark with orange safety paint prior to replacement or repair
  - Repair or perform concrete leveling in areas in immediate need of repair or possible safety hazard

**Priority/Criticality:** Per Board discretion

**Expenditure Detail Notes:** Expenditure timing and costs are depicted in the **Reserve Expenditures** table in Section 3. We estimate that up to 270 linear feet of curbs and gutters, or forty-five percent (45%) of the total, will require replacement during the next 30 years.

## Concrete Sidewalks

---

**Line Item:** 4.140

**Quantity:** Approximately 21,600 square feet at the clubhouse and along Old Cavalry Drive

**Condition:** Good to fair overall with cracks evident



Concrete sidewalk overview



Concrete sidewalk overview



Concrete sidewalk crack



Concrete sidewalk crack



**Concrete sidewalk cracks**

**Useful Life:** Up to 65 years although interim deterioration of areas is common

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

- Annually:
  - Inspect and repair major cracks, spalls and trip hazards
  - Mark with orange safety paint prior to replacement or repair
  - Repair or perform concrete leveling in areas in immediate need of repair or possible safety hazard

**Priority/Criticality:** Per Board discretion

**Expenditure Detail Notes:** Expenditure timing and costs are depicted in the **Reserve Expenditures** table in Section 3. We estimate that up to 8,650 square feet of concrete sidewalks, or forty percent (40%) of the total, will require replacement during the next 30 years.

## **Fence, Vinyl**

---

**Line Item:** 4.260

**Quantity:** 560 linear feet along Old Cavalry Rd near the entrance of the community

**History:** Unknown age

**Condition:** Fair overall with damage, displaced sections and organic growth evident



**Vinyl fence overview**



**Vinyl fence displacement**



**Organic growth**



**Damage**

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

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

- Annually:
  - Inspect and repair loose panels, and damage
  - Repair leaning sections and clear vegetation from fence areas which could cause damage
  - Periodically clean vinyl fence as needed

**Priority/Criticality:** Per Board discretion

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

## Light Poles and Fixtures

---

**Line Items:** 4.559, 4.560 and 4.561

**Quantity:** The Association maintains nine landscape poles with light fixtures, five parking lot and pool poles with eight light fixtures and eight entrance light poles and fixtures

**History:** The Association replaced the landscape light poles and fixtures in 2016. The remaining light poles and fixtures are assumed original.

**Condition:** The landscape light poles and fixtures are in good overall condition. The parking lot and pool light poles and fixtures are in fair overall condition. The entrance light poles and fixtures are in fair to poor overall condition.



**Landscape light pole and fixture overview**



**Parking lot light pole and fixture overview**



**Entrance light pole and fixture overview**



**Missing fixture**

**Useful Life:** Up to 25 years

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



- As-needed:
  - Inspect and repair broken or dislodged fixtures, and leaning or damaged poles
  - Replaced burned out bulbs as needed

**Priority/Criticality:** Per Board discretion

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

## Playground Equipment

---

**Line Items:** 4.660 and 4.662

**Quantity:** The Association maintains two playgrounds at the clubhouse and Dugout Terrace that include the following elements:

- Swing sets
- Playsets
- Surface, wood chips
- Border, plastic
- Benches
- Trash receptacles

**History:** Both playgrounds were installed approximately 18 years ago

**Condition:** The playground at the clubhouse house is in fair to poor overall condition with rust, loose equipment and wear evident. The playground at Dugout Terrace is in fair overall condition with wear and finish deterioration evident.



**Clubhouse playground overview**



**Dugout Terrace playground overview**



**Rust at clubhouse playground**



**Loose equipment at clubhouse**



**Wear at Dugout Terrace**



**Rust and finish deterioration at Dugout Terrace**

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

**Component Detail Notes:** Safety is the major purpose for maintaining playground equipment. We recommend an annual inspection of the playground equipment to identify and repair as normal maintenance loose connections and fasteners or damaged elements. We suggest the Association learn more about the specific requirements of playground equipment at [PlaygroundSafety.org](http://PlaygroundSafety.org). We recommend the use of a specialist for the design or replacement of the playground equipment environment.

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

- Annually:
  - Inspect and repair loose connections and fasteners or damaged elements
  - Inspect for safety hazards and adequate coverage of ground surface cover

**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 include an allowance in the unit cost for replacement of the safety surface and border.

## Retaining Walls, Timber

---

**Line Item:** 4.760

**Quantity:** Approximately 1,440 square feet along the sidewalk at Old Cavalry Drive

**History:** Original

**Condition:** Fair to poor overall with leaning sections, organic growth, wood rot and water stains evident



**Timber retaining wall overview – Note: displacement and organic growth**



**Timber retaining wall overview – Note: lean**



**Organic growth and wood rot**

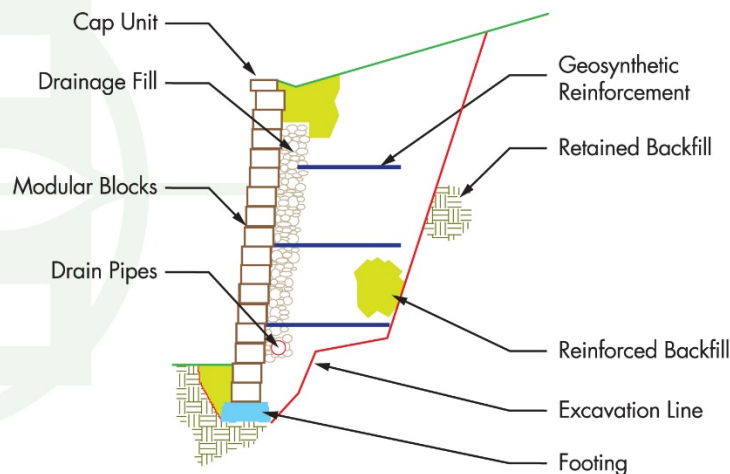


**Water stains**

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

**Component Detail Notes:** We advise Battlefield Green replace with a modular, interlocking dry-set masonry retaining wall system. The cost of dry-set masonry retaining walls is similar to the cost of timber walls. However, dry-set masonry retaining walls offer a longer useful life of up to 35 years and lower total maintenance costs. The following schematic depicts the typical components of a retaining wall system although it may not reflect the actual configuration at Battlefield Green:

## MASONRY RETAINING WALL DETAIL



© Reserve Advisors

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

- Annually:
  - Inspect and repair leaning sections or damaged areas
  - Inspect and repair erosion at the wall base and backside

**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.

## Roof, Metal, Pavilion

---

**Line Item:** 4.777

**Quantity:** The Association maintains one metal roof at the pavilion.

**History:** The roof was installed approximately 18 years ago.

**Condition:** Good to fair overall



**Metal roof overview**



**Metal roof underside**

**Useful Life:** Up to 30 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.

## Signage, Entrance Monuments

**Line Item:** 4.800

**Quantity:** The Association maintains four entrance monument property identification signs. The signage includes the following elements:

- Landscaping
- Light fixtures
- Letters
- Masonry
- Signage

**History:** Assumed original

**Condition:** Good to fair overall with efflorescence, rusted fasteners and cracks evident



Entrance sign overview



Entrance sign overview – *Note: efflorescence*



Entrance sign overview



Entrance sign overview



**Entrance sign overview**



**Rusted fasteners and cracks**

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

**Component Detail Notes:** Community signage contributes to the overall aesthetic appearance of the property to owners and potential buyers. Renovation or replacement of community signs is often predicated upon the desire to "update" the perceived identity of the community rather than for utilitarian concerns. Therefore, the specific times for replacement or renovation are discretionary.

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

- Annually:
  - Inspect and repair damage, vandalism and loose components
  - Verify lighting is working properly
  - Touch-up paint finish applications if applicable

**Priority/Criticality:** Per Board discretion

**Expenditure Detail Notes:** Expenditure timing and costs are depicted in the **Reserve Expenditures** table in Section 3. Our cost for renovation includes repointing and repairs to the masonry, landscaping as needed and replacement of the remaining components listed above.

## Site Furniture

---

**Line Item:** 4.820

**Quantity:** The Association maintains the following site furniture elements:

- Benches
- Picnic tables
- Trash receptacles

**History:** Various unknown ages

**Condition:** Fair overall



**Picnic table**



**Trash receptacle**

**Useful Life:** 15- 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.

## **Tennis Courts, Color Coat**

---

**Line Items:** 4.830 and 4.863

**Quantity:** 1,600 square yards comprising two tennis courts; one located at the clubhouse and one located at Dugout Terrace.

**History:** The Association performed a color coat approximately five years ago at the Dugout Terrace Court and three years ago at the clubhouse court.

**Condition:** The court at the clubhouse is in fair overall condition with cracks evident. The court at Dugout Terrace is in good to fair overall condition with cracks and staining evident.

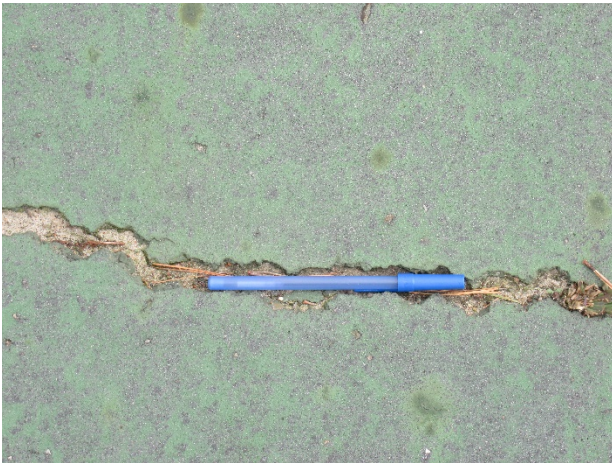




**Clubhouse tennis court overview**



**Dugout Terrace tennis court overview**



**Crack at clubhouse**



**Crack at clubhouse**



**Crack and staining at Dugout Terrace**

***Useful Life:*** Four- to six-years

**Component Detail Notes:** Prior to the application of the color coat, the Association should require the contractor to rout and fill all cracks with hot emulsion. This deters water infiltration and further deterioration of the asphalt playing surface.

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

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

## Tennis Courts, Fence

---

**Line Items:** 4.840 and 4.864

**Quantity:** Approximately 960 linear feet of fence at the clubhouse and Dugout Terrace

**History:** The Association replaced the Dugout Terrace fence in 2016. The clubhouse fence was replaced approximately 19 years ago.

**Condition:** The clubhouse fence is fair overall with warping and finish deterioration evident. The Dugout Terrace fence is good to fair overall with warping evident.



Clubhouse fence overview – *Note: warping*



Dugout Terrace fence overview – *Note: warping*



**Finish deterioration at the clubhouse**

**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.

## **Tennis Courts, Surface**

---

**Line Items:** 4.861 and 4.866

**Quantity:** 1,600 square yards of asphalt comprising two tennis courts

**History:** The Association replaced the Dugout Terrace surface in 2016. The clubhouse surface was replaced approximately 19 years ago.

**Condition:** The court at the clubhouse is fair overall with cracks evident. The court at Dugout Terrace is good to fair overall with cracks and staining evident.

**Useful Life:** Up to 25 years

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

- Annually:
  - Inspect and repair large cracks, trip hazards and possibly safety hazards
  - Verify gate and fencing is secure
  - Verify lighting is working properly if applicable
  - Inspect and repair standards and windscreens 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.

## Pool Elements



Pool overview

### Cover, Vinyl

---

**Line Item:** 6.300

**Quantity:** Approximately 3,700 square feet

**History:** Replaced in 2015

**Condition:** Fair overall with tears evident



Cover overview



Tears

**Useful Life:** Six- to eight-years

**Priority/Criticality:** Per Board discretion

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

## Fence, Aluminum

---

**Line Item:** 6.400

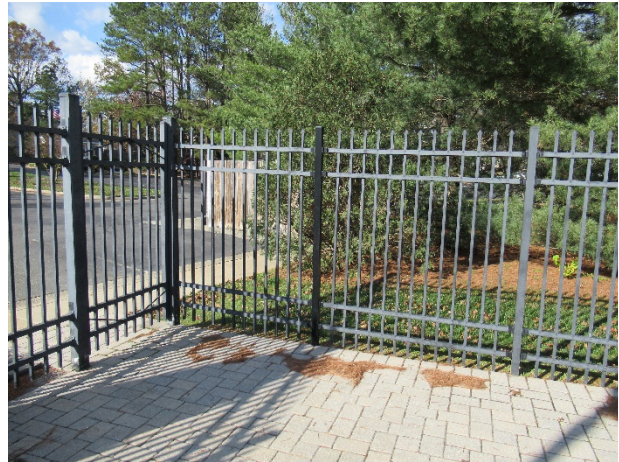
**Quantity:** 480 linear feet at the perimeter of the pool deck

**History:** Unknown age

**Condition:** Fair overall condition with finish deterioration, replaced sections and displacement evident



Fence overview



Fence overview



Finish deterioration



Replaced section and displacement

**Useful Life:** Up to 25 years

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

- Annually:
  - Inspect and repair loose fasteners or sections, and damage
  - Repair leaning sections and clear vegetation from fence areas which could cause damage

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

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

## Furniture

---

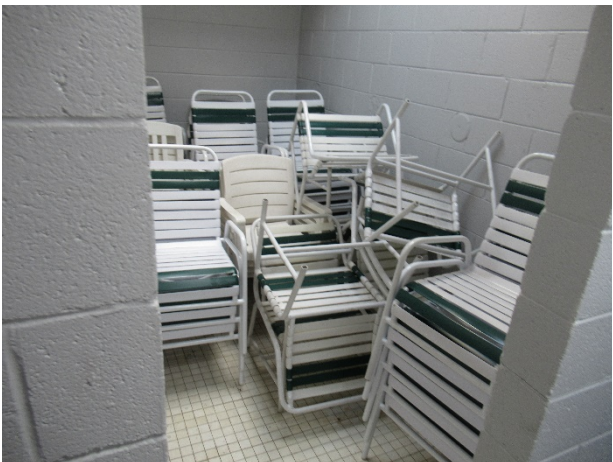
**Line Item:** 6.500

**Quantity:** The pool furniture includes the following:

- Chairs
- Diving board
- Ladders and life safety equipment
- Lounges
- Tables
- Umbrellas

**History:** Various unknown ages. The Association re-straped eight chairs and twenty-two lounges in 2020.

**Condition:** Good to fair overall. However, the diving board is in poor condition with rust evident.



Furniture overview



Diving board rust

**Useful Life:** Up to 12 years

**Priority/Criticality:** Per Board discretion

**Expenditure Detail Notes:** Expenditure timing and costs are depicted in the **Reserve Expenditures** table in Section 3. We recommend interim re-strapping, refinishing, cushion replacements, reupholstering and other repairs to the furniture as normal maintenance to maximize its useful life.

## Mechanical Equipment

---

**Line Item:** 6.600

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

- Automatic chlorinator
- Controls
- Filters
- Interconnected pipe, fittings and valves
- Pumps

**History:** Various unknown ages

**Condition:** Reported satisfactory



**Filters and pumps overview**



**Automatic chlorinator overview**

**Useful Life:** Up to 15 years

**Preventative Maintenance Notes:** We recommend the Association maintain a maintenance contract with a qualified professional and follow the manufacturer's specific recommended maintenance and local, state and/or federal inspection guidelines.

**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

---

**Line Item:** 6.800

**Quantity:** Approximately 3,400 square feet of plaster based on the horizontal surface area

**History:** In 2020, the Association performed a pool renovation project to inspect the drains of the main pool and the wading pool. Included in the scope of the project was refinishing and re-tiling of both pools. The project was in progress at the time of the inspection.

**Condition:** We assume the plaster and tile will be in good condition upon completion of the renovation in 2020.



**Pool overview – Note: drain removal**



**Pool overview – Note: tile removed**

**Useful Life:** 8- to 12-years for the plaster and 15- to 25-years for the tile. Given the inclusion of a pool structure and deck replacement and our anticipated useful life of the tile, we do not anticipate replacement of the tile as a stand-alone event during the next 30 years.

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

- Semi-annually:
  - Inspect and patch areas of significant plaster delamination, coping damage and structure cracks
  - Inspect main drain connection and anti-entrapment covers, pressure test circulation piping and valves
  - Test handrails and safety features for proper operation



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

- Removal and replacement of the plaster finishes
- 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

## Structure and Deck

---

**Line Item:** 6.900

**Quantity:** The concrete pool structure comprises 3,400 square feet of horizontal surface area. The pool deck pavers comprise approximately 5,970 square feet of horizontal surface area.

**History:** The pool structure is original and the pool deck paver system was replaced in 2015.

**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.



**Deck overview**

**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 Battlefield Green plan to replace the following components:

- Masonry paver deck
- Fences
- 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.

Battlefield Green 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 II Reserve Study Update." 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 Mechanicsville, Virginia at an annual inflation rate<sup>3</sup>. Isolated or regional

<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.

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

- The past and current maintenance practices of Battlefield Green 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 founders are also founders of Community Associations Institute's (CAI) Reserve Committee that developed national standards for reserve study providers. One of our founders 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.

**JUSTIN B. KLEIN**  
**Associate Engineer, Northeast Region**  
**Responsible Advisor**

**CURRENT CLIENT SERVICES**

Justin B. Klein, an Associate Engineer, is an Advisor for Reserve Advisors, LLC. Mr. Klein 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 and Transition Study Reports for apartments, high rises, condominiums, townhomes, and homeowners associations.



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

**Cherry View Park** – This 15 building condominium-style community located in Laurel, Maryland contains many elements such as a centrally located clubhouse and long access drive. Residents enjoy the gazebo and site furnishings spread throughout the property.

**North Point Villas** – Located in Reston, Virginia, this eight building apartment-style community features 106 units. The apartment buildings were constructed with vinyl siding, asphalt shingle roofs, masonry facades, and composite wood decking. The Association also maintains asphalt pavement, sidewalks, and four garage buildings.

**Aldie Estates 1** – Located just off Lee Jackson Memorial Highway in Aldie, Virginia, this Association maintains asphalt walking paths, pedestrian bridges, natural wetlands and wood fencing.

**Charlestown Oaks** – This development contains 60 townhome-style buildings containing 252 units in Trappe, Pennsylvania. The property includes retaining walls, multiple playgrounds, tennis courts, and turf pavers.

**Park Towers East** – Located in the Cross Country area of Baltimore, Maryland this nine-story building features construction elements that date back to 1967. The 100 condominium owners enjoy concrete balconies and a common area at the lobby.

**Forest Reach** – Conveniently situated between Bear Trap Dunes Golf Club and Bethany Beach, Delaware, this community of 58 single family homes is a short drive to the shores of the Atlantic Ocean. The Association maintains asphalt pavement, alleyways, sidewalks, concrete aprons, multiple ponds, a pool and pool house. The community also utilizes a solar system for some of its common area power needs.

**PRIOR RELEVANT EXPERIENCE**

Before joining Reserve Advisors, LLC, Mr. Klein attended Rose-Hulman Institute of Technology in Terre Haute, Indiana where he attained his Bachelor of Science degree in Mechanical Engineering. His rigorous coursework focused on using problem solving to understand mechanical systems and principles. During his undergraduate education, Mr. Klein worked to develop a debris displacement apparatus to be mounted inside a D-155 bulldozer for Komatsu America Corporation.

**EDUCATION**

Rose-Hulman Institute of Technology - B.S. Mechanical Engineering

**NICHOLAS R. JULIA, RS**  
**Regional Engineering Manager, Northeast Region**

**CURRENT CLIENT SERVICES**

Nicholas R. Julia, a Civil Engineer, is an Advisor for Reserve Advisors, LLC. Mr. Julia 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. Nicholas Julia often serves as Quality Assurance Reviewer for all types of developments to ensure our reports maintain the level of quality which is expected of our firm.



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

**One Park Crest Condominium** is an upscale 19-story high rise building located in McLean, Virginia just outside of Washington, D.C. Residents enjoy an 18<sup>th</sup> floor club room and outdoor pool. The building also contains an exercise room, library, professionally decorated lobby and underground parking.

**The Maryland Club** is an exclusive club located in the heart of Baltimore, Maryland. The elegant white marble main building dates back to 1892. The club contains squash courts, a banquet area, a dining hall, and a professional kitchen amongst many other amenities.

**Town of St. Michaels**, a scenic town located on the Eastern Shore of Maryland. The town includes an administrative building, police station, public works garage and offices, and a historic log cabin. The municipality also maintains the asphalt pavement streets throughout the town, multiple parks, two water towers and a complex arsenic removal water treatment system.

**One Loudoun Neighborhood Association** is an upscale planned unit development comprising townhomes and single family homes located in Ashburn, Virginia. The property includes a high-end clubhouse with over 12,000 square feet of interior space including a gymnasium and yoga studio. The property also includes walking trails, multiple playgrounds, a tennis court, sports court, and a pool.

**3883 Connecticut Avenue Condominium** is a 10-story midrise located in Washington, D.C. The building was constructed in 2002 and contains luxurious amenities including an elevated outdoor pool on the 8<sup>th</sup> floor, party room, exercise facility and an underground parking garage.

**Lake Petersburg Association** This man-made lake community of 380 single family homes is located in Petersburg, Illinois. Components of the property include a community boat launch, dock, three tennis courts, a basketball court, two maintenance buildings, an office, and vehicular equipment. The Association also maintains an earthen dam on the far side of the lake.

**PRIOR RELEVANT EXPERIENCE**

Before joining Reserve Advisors, Mr. Julia attended Marquette University in Milwaukee, Wisconsin where he attained his Bachelor of Science degree in Civil Engineering. His studies focused on transportation engineering and construction management engineering.

**EDUCATION**

Marquette University - B.S. Civil Engineering

**PROFESSIONAL AFFILIATIONS / DESIGNATIONS**

Engineer in Training (E.I.T.) – Washington D.C.

Reserve Specialist (RS) - Community Association Institute



**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 Battlefield Green 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) Battlefield Green 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.