

PREPARED FOR:

**CHIMNEY RIDGE CONDOMINIUM  
OWNERS ASSOCIATION  
DURHAM, NC**

MANAGED BY:  
**CAS, INC.**

**SEPTEMBER 24, 2019**

**FULL RESERVE STUDY**



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# INTRODUCTIONS

The Chimney Ridge Condominium Owners Association authorized Giles Flythe Engineers to perform a Full Reserve Study for the Chimney Ridge community located in Durham, NC. The purpose of the reserve study is to assist the association in planning for future capital repair expenses. A reserve study is an important tool for an association to adequately fund capital reserve accounts through regular annual reserve contributions. Adequately funded capital reserve accounts reduce the need to defer capital repairs, collect special assessments or borrow funds for capital repair projects.

A community association typically has certain responsibilities as described in the association governing documents. These responsibilities often include maintaining common areas and other components. An association, as a non-profit organization, will typically have two general asset cash accounts including an operating account and a reserve account. The operating account is funded from regular budgeted assessments and is used to fund routine operating expenses that occur on a predictable cycle, typically monthly or up to annually. The reserve account is funded from regular contributions and is primarily used to fund non-annual capital repair expenses.

The focus of the reserve study is on the reserve account. We have projected capital repair expenses over a term of twenty years. The capital repair expenses are limited to those components for which the association is responsible for maintaining. Capital repair expense estimates include an expected useful life and remaining useful life of the components to develop a projected schedule for capital repairs over the term. After developing a schedule of capital repairs over the term, we completed a cash flow analysis forecasting reserve account balances over the term and provided funding recommendations as needed. Capital repair expense estimates and funding estimates are most reliable in the first portion of the term. Updating a reserve study every three to five years will mitigate the impacts of variation in repair costs, component wear, inflation and reserve funding over time.

Capital reserve funding recommendations are provided to address funding principles including sufficient funds required, a stable reserve contribution rate over the term, an equitable contribution rate over the term, and fiscal responsibility. The reserve study is intended to assist the association in developing budgeted reserve contributions.

The report includes a narrative section which describes the scope of the reserve study, a discussion of observations and capital repair allocations, a general description of capital repairs and a description of our cash flow analysis and funding recommendations. The report appendices include the capital reserve analysis with tables detailing an itemized list of capital repair expenses, an itemized list of expenses by year and our cash flow analysis. A photo log is provided and includes a representative sample of our observations. The report includes multiple sections with information presented in various forms and should, therefore, be read in its entirety.

## EXECUTIVE SUMMARY

The Chimney Ridge Condominium Owners Association is a condominium building community situated off of Highgate Drive in Durham, NC. Construction of the community began in approximately 1986 according to Durham County Tax Records, and the community includes a total of 130 condominium units. The community consists of 7 buildings housing the condominium units and a pool with restroom facilities and housing for the pool equipment.

The association has responsibility for the common area site improvements including the private asphalt-paved streets and parking areas, concrete curbing, sidewalks, site fencing, a mailbox kiosk, and common area drainage systems. The amenities maintained by the association include the swimming pool and associated equipment and furnishings, and pool house building. The association also maintains the exterior façade of the buildings including roofing and gutters, siding, wood decking, and concrete patios.

The buildings, common areas, and site improvements are generally in fair to poor condition. Based on our evaluation, maintaining the current level of funding is **not** projected to maintain a positive balance through the term of this study. We have provided recommendations for annual reserve contribution schedules that provide sufficient funding to meet capital expenditure requirements in the next twenty years, in summary as follows:

- **Alternative 1:** Beginning in 2020, increase the annual reserve contribution to \$60,000. Beginning in 2022, increase the annual contribution by \$25,000 every other year through 2034. In addition to this step funding method, two special assessments are required. The first assessment should be collected in January of 2020, in the amount of \$450,000 (\$3,462/unit). The second assessment should be collected in January of 2025, in the amount of \$250,000 (\$1,923/unit). This alternative is projected to maintain a positive balance through the term of this study.
- **Alternative 2:** Beginning in 2020, increase the annual reserve contribution to \$120,000. Thereafter, increase the annual contribution by 6% every year through 2028. In addition to this percentage increase funding method, a special assessment is required. The assessment should be collected in January of 2020, in the amount of \$350,000 (\$2,692/unit). This alternative is projected to maintain a positive balance through the term of this study.

A more detailed analysis of the reserve fund has been provided in Appendix A.

Some significant expenditures are expected over the term of the study. Some of the more notable examples are listed below:

- Repair, seal and resurface asphalt pavement
- Replace building roofs and gutters
- Repair/Replace/Paint exterior siding and trim on the buildings

Additional, less significant, capital expenditures are anticipated over the term of this study. Those items that will require repair or replacement are discussed later in this report.

## PURPOSE & SCOPE

We have completed this study to estimate capital repair expenses the association is responsible for over the term of the study and provide a cash flow analysis and capital reserve funding plan. This study is intended to assist the association in determining the allocation requirements into the reserve fund which are projected to meet future anticipated capital expenditures for the community.

This report estimates capital repair expenses for the community twenty years into the future. Variations in capital repair expense forecasts due to the quality of maintenance, weather and other events may occur. Over time, age, premature deterioration, or other factors may necessitate the addition of assets into the reserve study. Additionally, fluctuations in material and labor costs beyond assumed inflation rates may also affect the accuracy of the forecasts. Therefore, a reserve study should be routinely updated, typically on a three to five-year cycle to provide the most accurate assessment of needs and financial obligations of the community.

This study has been performed according to the scope as generally defined by the Chimney Ridge Condominium Owners Association, Giles Flythe Engineers Inc., and the standards of the Community Associations Institute. The findings and recommendations are based on interviews with the community's management personnel; a review of available documents; and a limited visual inspection of the components maintained by the association.

The Cash Flow Method of calculating reserves has been utilized, whereby contributions to the reserve fund are designed to offset the variable annual expenditures. Funding alternates are recommended which are designed to achieve at minimum a Baseline Funding goal by maintaining a positive balance for the term of the study. We have also included a threshold funding goal which provides a minimum reserve account over the term. The minimum balance is typically calculated by determining the total over term forecasted expenses and dividing by the length of the term in years. This minimum threshold balance will help offset the risk of fluctuations in labor and material costs and component wear.

To determine which components should be included in this analysis, we used the following guidelines:

- The component must be maintained by the association.
- The component must have an estimated remaining useful life within the term of this study.
- The funding for the repair should be from the reserve account, not through an annual operating budget or other maintenance contracts.
- The cost of the capital repair must be significant enough to not be reasonably funded from an annual operating budget.

### What is a reserve study?

A reserve study is a long-term capital budget planning tool which compares the current reserve fund of an organization to future capital repairs and replacements.

A reserve study is a tool to help identify and prepare for major repair and replacement projects for a community.

It is recommended that a reserve study be performed every five years to ensure that communities are saving the necessary funds for capital repairs and improvements.

Our process for completing the reserve study includes:

1. Reviewing information provided including governing documents, association financial statements, and information on previous or planned capital repairs.
2. Reviewing available information on the property as needed. This may include plat maps, tax records, historical aerial photographs, available site, and building plans.
3. Conducting a visual inspection of the property. This may include interviewing association representatives during the inspection.
4. Developing an inventory of components to be included in the reserve study.
5. Predicting their remaining service life and, approximating how frequently they will require repair or replacement.
6. Estimating repair or replacement costs (in 2019 dollars) for each capital item.
7. Develop a cash flow analysis adjusting for inflation and return on invested monies to determine the adequacy of current reserve funding plans.
8. Develop funding recommendations with specific reserve contribution recommendations for each year of the term.

The statements in this report are opinions about the present condition of the areas inspected within the community. Our inspection is limited to a visual ground level inspection and we did not remove any surface materials, perform any testing, or move any furnishings. This study is not an exhaustive technical evaluation or building code compliance review. For additional limitations, see Conclusion and Limitations.

## **Standards of Reference**

The following definitions are provided as a standard of reference:

*Excellent:* Component or system is in “as new” condition, requiring no rehabilitation and should perform in accordance with expected performance.

*Good:* Component or system is sound and performing its function, although it may show signs of normal wear and tear. Some minor rehabilitation work may be required.

*Fair:* Component or system falls into one or more of the following categories: a) Evidence of previous repairs not in compliance with commonly accepted practice, b) Workmanship not in compliance with commonly accepted standards, c) Component or system is obsolete, d) Component or system approaching the end of expected performance. Repair or replacement is required to prevent further deterioration or to prolong expected life.

*Poor:* Component or system has either failed or cannot be relied upon to continue performing its original function as a result of having exceeded its expected performance, excessive deferred maintenance, or state of disrepair. The resent condition could contribute to or cause the deterioration of other adjoining elements or systems. Repair or replacement is required.

*Adequate:* A component or system is of a capacity that is defined as enough for what is required, sufficient, suitable, and/or conforms to standard construction practices.

# SOURCES OF INFORMATION

## Date of Inspection

Onsite inspection of the property occurred on April 24, 2019.

## Interviews

We interviewed the following people in connection with this study:

- Jacob Hildebrand, CAS, Inc., Community Manager

## Documents

The following documents were made available to us and reviewed:

- Durham County tax records
- Recorded Plat Maps
- Chimney Ridge Condominium Association Governing Documents
- Association financial statements

## Cost Estimates

- Our internal data files on similar projects
- Local contractor estimates for similar projects
- R.S. Means Construction Cost Estimating Data

## DESCRIPTION

The Chimney Ridge Condominium Owners Association is a condominium building community situated off of Highgate Drive in Durham, NC. Construction of the community began in approximately 1986 according to Durham County Tax Records, and the community includes a total of 130 condominium units. The community consists of 7 buildings housing the condominium units and a pool with restroom facilities and housing for the pool equipment.

The association has responsibility for the common area site improvements including the private asphalt-paved streets and parking areas, concrete curbing, sidewalks, site fencing, a mailbox kiosk, and common area drainage systems. The amenities maintained by the association include the swimming pool and associated equipment and furnishings, and pool house building. The association also maintains the exterior façade of the buildings including roofing and gutters, siding, wood decking, and concrete patios.

Two community entrances are located off of Highgate Drive in the Woodcroft Master Association. There is a swimming pool with a pool house including men's and women's restrooms and a pool pump room building located in the center of the community. Entrance signage is located on the westernmost entrance off of Highgate Drive. Stormwater drainage from the site flows via surface runoff into grassed and rip rap swales and curb inlets which lead to an underground piping network which discharges offsite.

## OBSERVATIONS

The following key observations were made about the current condition of the more significant and costly common elements of the property:

### Site Improvements

We understand that the maintenance of the private asphalt paved streets is the responsibility of the Association. The asphalt paving was in good to fair condition throughout the community. Typically, we recommend the application of an oil resistant sealant to asphalt paved surfaces on an approximately 5-year cycle. At this same time, all cracks should be properly filled, patched, and sealed. We have allocated funds to reseal the pavement on a 5-year cycle beginning in 2023.

Assuming sealing and crack repairs occur in the interim, we anticipate the asphalt paving in the community to have an estimated remaining useful life of approximately 15 years prior to resurfacing. We have allocated funds to resurface the current asphalt paving in 2035. This would include milling and removing the top 2" of asphalt paving throughout all paved areas, repairing base course as needed and installing a new 2" thick layer of asphalt over all paved surfaces.

The association is responsible for maintaining the concrete walkways, curbing, patios, and other flatwork throughout the community and adjacent to the units. The concrete flatwork generally appears to be in fair condition, with some minor cracking and oxidation evident. Over time, it is likely that cracking will continue develop and worsen in concrete surfaces due to differential settlement. As cracking develops, it is likely that sections of the flatwork will require periodic repairs. We have allocated funds for periodic repairs and/or replacement of concrete surfaces (flatwork and curbing) as required and have assumed that 5% of the flatwork surfaces and 5% of the curbing will require maintenance every 5 years beginning in 2023. Repairs may include grinding to reduce unevenness at cracking or saw-cutting, removing and replacing sections of the concrete. We have assumed isolated areas of upheaval or possible trip hazards would be repaired through an annual maintenance budget in the interim.

Stormwater drainage systems include gutters and downspouts that discharge through underground leader pipes that daylight to grade. Runoff leads to catch basins within the landscaped areas and asphalt paved roads which discharge into the municipality's drainage system and offsite via underground pipes. Some minor drainage concerns were observed at the time of the site inspection, including areas of improper slope to drain resulting in saturated surface soils and areas of poorly established or eroded ground cover. Edge scouring around the rip rap leading to the catch basin to the right of building 3702 was observed, causing the inlet to be at a higher elevation than surrounding grade. Over time, additional drainage concerns are likely to develop and require periodic repairs or improvements to ensure the drainage systems are appropriately functioning to discharge stormwater towards the appropriate systems. Landscaped swales tend to accumulate sediment that settles out during storm events and will need to be periodically removed and re-graded. Erosion concerns are likely to develop in steeper slopes which would require stabilization repair. In addition, over time, small landscape drainage systems will likely need to be installed in flat areas of the community to address concerns.

As the community ages, we would also recommend having portions of the private drainage infrastructure in the streets inspected with a video camera system, flushed, and repaired as necessary.

We have allocated funds for significant repairs to the drainage systems every 5 years beginning in 2021. Drainage repairs would likely include minor repairs to stabilize areas of surface erosion, adding riprap or vegetation to stabilize exposed areas, creating positive slopes to drain, re-trenching and re-armoring landscaped swales, repairing/hydro-jetting buried common area stormwater piping and other drainage system improvements. These types of repairs can be moderate (re-trenching swales, flushing pipes), to very expensive (new underground pipe systems). We have included a moderate budget to help cover these costs.

The fencing around the three dumpster areas consists of wood privacy fencing and is in generally good condition. We have assumed minor repairs and treatment of the wood fencing will be covered under an annual maintenance budget. We have allocated funds to replace the wood privacy fencing around the dumpster areas every 20 years beginning in 2037.

Sections of wood timber retaining walls are installed in the community to adjust for topographical changes, including around the buildings and adjacent to the walking paths leading to the buildings. The retaining walls ranged from approximately 2' to 4' in height and were in varying condition. The retaining wall behind building 3804 was out of plumb and had rot damage and erosion at the top. We have provided an allocation of funds to replace approximately 25% of the timber retaining walls, as needed, on a 5-year cycle beginning in 2021. We recommend the Association continuously monitor the condition of the retaining walls for symptoms of structural concerns.

An entrance sign is located at the westernmost entrance off of Highgate Drive and appeared to be in fair condition, with minor paint deterioration evident. The entrance signage consisted of a brick monument with a painted aluminum sign. We have assumed repair/replacement of the entrance signage is the responsibility of the Woodcroft Master Association.

A sheltered mailbox station is installed on Chimney Ridge Place to the north of the pool. The mailbox station includes wood siding and trim, which will require periodic painting. Due to the minimal painted components surrounding the kiosk, we have assumed minor painting and repairs will be funded through an annual maintenance budget. The mailbox inserts appeared to be in relatively good to fair condition. Due to frequent/daily use, mailbox hinges and locking mechanisms will begin to wear and will require replacement over term. These components typically have an expected useful life of approximately 20 years, and we have included funds to replace the mailbox kiosk in 2032.

## **Common Building Exteriors**

The Association is responsible for maintaining the roofing, gutters, downspouts and exterior siding and trim of each building.

The exteriors of the buildings are comprised of painted wood siding and trim. Windows are aluminum, double-hung, thermal pane units. Entrance doors incorporate a fiberglass skin. Portions of rotted and

moisture damaged siding were observed throughout the community. Rot was observed in the chimney chase of building 3804 and the siding boards were warped at the rear-left of building 3704. Typically, we would fully replace the siding throughout the community due to its current condition. However, due to funding constraints, and per the request of the board, we have allocated for sectional replacement, as needed, on an approximately 5-year cycle beginning in 2020. If left unaddressed, moisture intrusion into the buildings could lead to significant structural and finished material damages. Re-painting of the siding and trim replacement will also be required on a regular basis. We recommend repainting/staining the siding/trim and wood decks at each unit in an interval not-to-exceed five (5) years, and we have allocated funds for this cycle beginning in 2020 coinciding with siding repairs. Painting cycles should include repairing sealants/caulking as needed, repairing siding and trim as needed, adequate surface preparations and the application of 2 coats of a high-quality exterior paint on all painted surfaces.

Note that the HOA is not responsible for glass replacement and screens for doors and windows. We have also assumed that exterior door maintenance and/or replacement is the responsibility of the individual unit owners, with the exception of painting. We have assumed painting of the doors will be covered in the painting schedule discussed above. Responsibility for re-screening the rear porches and general repairs to the frames is assumed to be the responsibility of the individual unit owner.

Per the community manager, the wood decks on the units have been replaced within the last four years, but have not been stained. The decks should be stained per the painting schedule discussed above. Additionally, several wood entryways and wood stairs exposed to exterior conditions were observed in the community. We anticipate the wooden decking and railings of the decks and entry walkways, and wood stairs will require replacement on a 20-year schedule. We have allocated funds to replace the deck and walkway decking and railings and exterior stairs in 2038. This allocation includes funding for minor structural repairs to the decks and walkways, as needed through the term. No significant visible structural deficiencies were observed at the time of inspection.

The predominant pitched roof surfaces over the buildings are covered in 3-tab asphaltic-fiberglass shingles and are in varying condition from fair to poor. Typically, this type of roofing will last 20 years. We strongly recommend that any re-roofing project closely follow procedures outlined by the National Roofing Contractors Association's *Roofing and Waterproofing Manual*. A re-roofing sequence should include removal of the existing roofing material, replacement of any inadequate roof sheathing, damaged flashing and drip edge components. We anticipate the roofs will be replaced on a 20-year schedule in two phases beginning in 2022 (Phase 1: buildings 3700, 3702, 3704, 3706, and the pool building; Phase 2: buildings 3803, 3804, and 3805). Evidence of leaking around the skylight on the pool building was observed in the drywall in the men's restroom. Note, due to funding constraints, we have delayed the roof replacement schedule by approximately 2 years. It is likely that minor roofing repairs will be required in the interim including replacement of exhaust vent boots and minor flashing repairs. We have assumed these types of repairs will be funded from a general operating budget. We have included funds for limited replacements and repairs of gutters and downspouts in our allocation for replacement of the roofs.

The steel door to the lower level of the pool building was damaged and corroded. We have allocated funding to replace the door for safe-keeping of the pool mechanical equipment in 2020. The doors to the men's and

women's restrooms in the upper floor of the pool house were in fair condition, and we have allocated funding to replace these doors in 2027. Typically, we anticipate these doors to have a life span of approximately 20 years if properly maintained.

## **Common Building Interiors**

The Association is responsible for maintaining the pool building, including men's and women's restrooms and storage for the pool equipment.

Each restroom includes stalls with partition walls and doors, sinks, and baby changing stations. The restroom fixtures generally appeared to be in good condition. We have allocated funds to refurbish the restrooms on a 15-year cycle beginning in 2032. This would include replacing partition walls/doors, replacing sinks and replacing toilet fixtures as needed. We assume painting and minor repairs to the finished walls and flooring in the restrooms will be covered by an annual maintenance budget.

## **Mechanical and Plumbing Systems**

The pool building is served by an electric water heater in a mechanical room with the pump equipment and electric panels. The water heater was manufactured in 2008. Water heaters have an expected useful life of approximately 15 years, and we have allocated funds for replacement as such beginning in 2023.

Interior wall mounted electrical breaker panels are located in the mechanical room of the pool building, and wiring with outlets and light fixtures are located throughout. We have provided an allocation of funds for long-term repairs to the plumbing/electrical systems at the clubhouse beginning in 2032.

The association is likely responsible for buried sanitary sewer and drainage piping in common areas. It is likely that sectional repairs of buried piping will be required through the term of the study due to tree root growth and other concern. We have provided an allocation of funds for repairs to underground sanitary sewer and drainage piping on a 10-year cycle beginning in 2028.

## **Amenities**

Amenities owned and maintained by the Association include the pool and associated furnishings.

The pool plaster surface appeared to be in fair condition with no reported issues by the community manager. Note that the pool was filled with a significant amount of debris during our inspection and visibility was limited. Typically, pools should be drained, minor cracks repaired, and re-plastered on an approximately 10 to 15-year cycle. We have budgeted funds for full resurfacing repairs on a 12-year cycle beginning in 2025.

The concrete pool deck includes a textured slip-resistant coating that appeared to be in fair to poor condition. Over time, the pool deck textured coating will begin to deteriorate and delaminate from the concrete surface.

Vegetation and spalling were observed between the joints of the concrete panels. We have allocated funds to replace the textured coating on a 10-year cycle beginning in 2021. An area of wood decking is also installed on the southwest side of the pool. The wood decking appeared to be in fair condition with visible warping and deterioration in some of the decking. This type of decking typically has an approximate useful life of 20 years. We have allocated funds to replace the wood decking in 2027.

The pool pump and filtration equipment include a 3-horsepower pump and one sand filter serving the pool. Pool pump and filtration equipment is typically replaced as components fail. The sand in the filter will likely require replacement on an approximately 5-year cycle. We have provided funds to replace components of the pump and filtration system on a 3-year cycle beginning in 2022.

Pool and outdoor furniture consist of plastic chaise lounges, tables, and chairs. We have allocated funds to replace the pool furnishings on a 5-year cycle beginning in 2024.

We noted chain link fencing materials installed around the perimeter of the pool. The fencing materials around the pool appeared to be in generally good condition. We have allocated funds to replace the chain link fencing around the pool on a 25-year cycle. We have allotted funds to replace the pool fencing in 2038.

## RESERVE FUND ANALYSIS

We have performed a cash flow analysis projecting balances in the reserve account over the term of this study. We have included estimated capital repair expenses detailed in the first several pages of Appendix A. We have included tables and graphs depicting current funding levels along with recommended funding alternatives.

The financial projections include an assumed inflation rate of 3.0% and an assumed average return on invested funds of 1.5%. The inflation rate adjustment is noted at the bottom of the annual expense page and the return on invested funds is noted in the existing funding level and funding alternative cash flow tables.

The software utilized to analyze the reserve funds was developed by Giles Flythe Engineers, Inc. in cooperation with a technology consultancy. The software and our analysis system have been extensively reviewed by leading community association and non-profit certified public accountants.

The capital repairs listed were derived from the initial request for proposal, discussions with association representatives, our informal review of governing documents and our site inspection. The association should confirm that the items listed are, in fact, the responsibility of the association and appropriate to fund from the reserve account.

Appendix A includes the following:

1. The Project Summary page that lists pertinent details specific to the association, the terms of the analysis and summarizes total over term expenses and recommended threshold balance.
2. The Expense Projection page that itemizes the capital repairs by category, illustrates our cost estimating by unit and provides estimated useful life and remaining useful life of each item.
3. The Annual Expense Projection pages that populate the capital repairs over the term of the study. This page includes a total adjusted for inflation at the bottom of the pages.
4. The Itemized Funding Analysis page provides a summary of the capital expenditures over the term and a graph breaking down the portion of the capital repairs into each category – Site Improvements, Building Exterior, Building Interior, Mechanical/Plumbing Systems, and Amenities.
5. The Current Funding Projection page provides a table and graph illustrating our cash flow analysis assuming the association maintains the current level of reserve contributions over the term of this study. The table includes projected reserve account balances, contributions, return on invested funds and capital repair expenses for each year of the term of this study.
6. The Funding Alternative pages each provide a table and graph illustrating our cash flow analysis assuming the association implements one of our funding recommendations detailed below.

**Current Reserve Funding Rate:                   \$36,103 per year**

**Current Reserve Balance:                       \$65,373 (Projected 2020 starting balance)**

Note that based on our cash flow analysis, maintaining the current funding level over term is not projected to maintain a positive/healthy balance over the term.

We have included recommended funding alternatives to your current reserve-funding program and recommend that the board adopt an alternative that best reflects the objectives of the community. Our funding recommendations are as follows:

- **Alternative 1:** Beginning in 2020, increase the annual reserve contribution to \$60,000. Beginning in 2022, increase the annual contribution by \$25,000 every other year through 2034. In addition to this step funding method, two special assessments are required. The first assessment should be collected in January of 2020, in the amount of \$450,000 (\$3,462/unit). The second assessment should be collected in January of 2025, in the amount of \$250,000 (\$1,923/unit). This alternative is projected to maintain a positive balance through the term of this study.
- **Alternative 2:** Beginning in 2020, increase the annual reserve contribution to \$120,000. Thereafter, increase the annual contribution by 6% every year through 2028. In addition to this percentage increase funding method, a special assessment is required. The assessment should be collected in January of 2020, in the amount of \$350,000 (\$2,692/unit). This alternative is projected to maintain a positive balance through the term of this study.

The reserve study is focused on the capital reserve account and budgeted contributions to reserves. The recommendations above are solely attributed to the annual reserve contributions. The association likely has many line items in the annual operating budget that should also be periodically adjusted as part of an annual budgeting process.

The capital repair/replacement cost estimates we have developed are based on 2019 dollars. Our reserve study does include an adjustment for inflation and an assumed rate of return on invested funds.

## CONCLUSION & LIMITATIONS

We have provided reserve funding recommendations based on our analysis of the association-maintained components, estimated capital repair costs over the term and the current funding levels. Further detail of the reserve fund analysis is provided in Appendix A.

The physical analysis portion of this reserve study was completed through a limited visual inspection. The visual inspection was completed from ground level unless otherwise specified. The visual inspection is generally limited to readily accessible and visible common areas that would likely require capital repair activities over the term. Note that this inspection does not include removing surface materials, excavation or any testing. The inspection does not include riparian buffers or other protected common areas. Buried utility components and other concealed components were not inspected as part of this analysis and we cannot be responsible for the condition of components not inspected.

The observations described in this study are valid on the date of the investigation and have been made under the conditions noted in the report. We prepared this study for the exclusive use of the Chimney Ridge Condominium Owners Association. No other party should rely on the information in this report without consent. If another individual or party relies on this study, they shall indemnify and hold Giles Flythe Engineers Inc. harmless for any damages, losses, or expenses they may incur as a result of its use. This study is not to be considered a warranty of condition, and no warranty is implied. The appendices are an integral part of this report and must be included in any review.

Members of the Giles Flythe Engineers team working on this reserve study are not members of, or otherwise associated with the association. Giles Flythe Engineers has disclosed any other involvement with the association that could result in conflicts of interest.

Information provided by the representatives of the association regarding financial, physical, quantity, or historical issues, will be deemed reliable by Giles Flythe Engineers. The reserve balance presented in the Reserve Study is based upon information provided and was not audited. Information provided about reserve projects will be considered reliable. Any on-site inspection should not be considered a project audit or quality inspection. Giles Flythe Engineers is not aware of any additional material issues which, if not disclosed, would cause a distortion of the association's situation.

This reserve study is partially a reflection of information provided to us. The reserve study is assembled for the association's use and is not intended to be used for the purpose of performing an audit, quality/forensic analyses or background checks of historical records. Further, this study should not be considered a building code compliance analysis. The purpose of this study is to provide the association with a financial tool and is not to be considered an exhaustive technical or engineering evaluation which would consist of a broader scope of work.

We have provided estimated costs of capital repairs. These costs are based on our general knowledge of the construction industry. We have relied on standard sources as needed, such as Means Building Construction Cost Data and estimates reviewed by Giles Flythe Engineers on similar projects. We have performed no design work or other engineering analysis as part of this study, nor have we obtained competitive quotations or estimates from contractors. Actual repair costs can vary due to a variety of factors. We cannot be responsible for the specific cost estimates provided.

If you have any questions about this reserve study, please feel free to contact us. Thank you for the opportunity to serve you.

Respectfully submitted,



Terry J. Smull, PE  
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Kevin R. Giles, RS  
Project Manager  
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**APPENDIX A: RESERVE FUND PROJECTIONS**

**PROJECT SUMMARY**

**Chimney Ridge Condominium Owners Association**

City/state location:	Durham, NC
Date of inspection:	4/24/2019
Number of units:	130
Term of study (years):	20
Beginning Year of Term	2020
Estimated starting reserve account balance:	\$65,373
Current annual reserve contribution rate:	\$36,103
Assumed inflation rate:	3.00%
Assumed rate of return on invested funds:	1.50%
<b>Total over term capital expenditure (un-inflated):</b>	<b>\$2,691,700</b>
<b>Total over term capital expenditure with inflation:</b>	<b>\$3,569,660</b>
<b>Recommened threshold reserve balance:(Average annual capital expenditure)</b>	<b>\$178,483</b>

## EXPENSE ESTIMATES

Capital Item Description	Quantity	Unit	Unit Cost	Total Cost Per Cycle	Estimated Useful Life (years)	Estimated Remaining Life (years)	Notes
<b>Site Improvements</b>							
Crack fill, seal coat, stripe asphalt paving	9,250	SY	\$2.00	\$18,500	5	3	
Resurface asphalt paving	9,250	SY	\$20.00	\$185,000	20	15	
Concrete flatwork repair	110	SY	\$110.00	\$12,100	5	3	Approx. 5% every 5 years
Repair sections of concrete curb and gutter	225	LF	\$45.00	\$10,125	5	3	Approx. 5% every 5 years
Common area drainage improvements	1	LS	\$10,000.00	\$10,000	5	1	
Repair/replace wood fence around dumpsters	290	LF	\$30.00	\$8,700	20	17	
Repair/replace portions of timber retaining walls	525	SF	\$30.00	\$15,750	5	1	Approx. 25% every 5 years
Replace mailbox kiosks	1	EA	\$3,000.00	\$2,100	20	12	
<b>Building Exterior</b>							
Replace roofing and gutters Phase I	550	SQ	\$295.00	\$162,250	20	2	
Replace roofing and gutters Phase II	300	SQ	\$295.00	\$88,500	20	7	
Exterior painting and siding/trim repair, including decks/balconies and pool building	131	EA	\$3,000.00	\$393,000	5	0	
Replace wood balcony and entry walkway decking and railings	11,250	SF	\$15.00	\$168,750	20	18	
Replace alleyway stairs exposed to exterior	26	EA	\$2,000.00	\$52,000	20	18	
Replace pool pump room door	1	EA	\$1,500.00	\$1,500	20	0	
Replace doors on pool bathrooms	2	EA	\$1,500.00	\$3,000	20	7	
<b>Building Interior</b>							
Refurbish pool restrooms, fixtures	2	EA	\$7,500.00	\$15,000	15	12	
<b>Mechanical, Electrical, Plumbing Systems</b>							
Replace pool building water heater	1	LS	\$2,000.00	\$2,000	15	3	
Allocation for electrical/plumbing system repairs at pool bathrooms	1	LS	\$8,000.00	\$8,000	15	12	
Allocation for buried private street utility repairs	1	LS	\$20,000.00	\$20,000	10	8	
<b>Amenities</b>							
Re-plaster swimming pool surface	800	SF	\$18.00	\$14,400	12	5	
Repair, re-coat swimming pool deck	3,400	SF	\$4.00	\$13,600	10	1	
Repair/replace wood decking at pool	600	SF	\$15.00	\$9,000	20	7	
Repair pool pump and filtration equipment	1	LS	\$4,500.00	\$4,500	3	2	
Replace portions of pool furniture	28	EA	\$125.00	\$3,500	5	4	
Replace chainlink fence at pool	300	LF	\$30.00	\$9,000	25	18	

SY: Square Yard SF: Square Feet LF: Linear Feet SQ: Roofing Square  
EA: Each LS: Lump Sum SYS: System

## ANNUAL EXPENSE PROJECTION

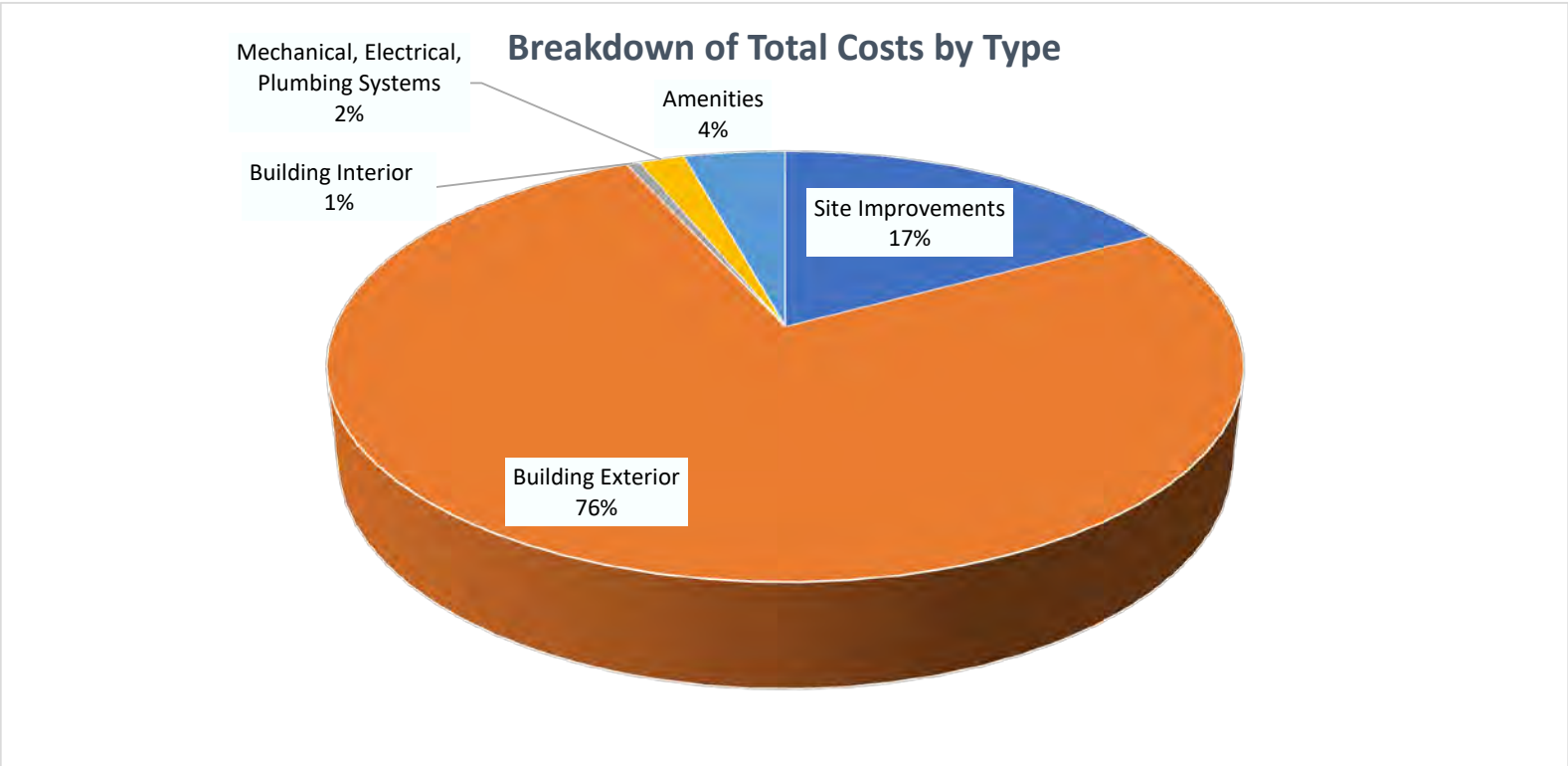
Description	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
<b>Site Improvements</b>										
Crack fill, seal coat, stripe asphalt paving				\$18,500					\$18,500	
Resurface asphalt paving										
Concrete flatwork repair				\$12,100					\$12,100	
Repair sections of concrete curb and gutter				\$10,125					\$10,125	
Common area drainage improvements		\$10,000					\$10,000			
Repair/replace wood fence around dumpsters										
Repair/replace portions of timber retaining walls		\$15,750					\$15,750			
Replace mailbox kiosks										
<b>Building Exterior</b>										
Replace roofing and gutters Phase I			\$162,250							
Replace roofing and gutters Phase II								\$88,500		
Exterior painting and siding/trim repair, including decks/balconies and pool building	\$393,000					\$393,000				
Replace wood balcony and entry walkway decking and railings										
Replace alleyway stairs exposed to exterior										
Replace pool pump room door	\$1,500									
Replace doors on pool bathrooms								\$3,000		
<b>Building Interior</b>										
Refurbish pool restrooms, fixtures										
<b>Mechanical, Electrical, Plumbing Systems</b>										
Replace pool building water heater				\$2,000						
Allocation for electrical/plumbing system repairs at pool bathrooms										
Allocation for buried private street utility repairs									\$20,000	
<b>Amenities</b>										
Re-plaster swimming pool surface						\$14,400				
Repair, re-coat swimming pool deck		\$13,600								
Repair/replace wood decking at pool								\$9,000		
Repair pool pump and filtration equipment			\$4,500			\$4,500			\$4,500	
Replace portions of pool furniture					\$3,500					\$3,500
Replace chainlink fence at pool										
<b>Totals</b>	<b>\$394,500</b>	<b>\$39,350</b>	<b>\$166,750</b>	<b>\$42,725</b>	<b>\$3,500</b>	<b>\$411,900</b>	<b>\$25,750</b>	<b>\$100,500</b>	<b>\$65,225</b>	<b>\$3,500</b>
<b>Totals including inflation:</b>	<b>\$394,500</b>	<b>\$40,531</b>	<b>\$176,905</b>	<b>\$46,687</b>	<b>\$3,939</b>	<b>\$477,505</b>	<b>\$30,747</b>	<b>\$123,602</b>	<b>\$82,625</b>	<b>\$4,567</b>

## ANNUAL EXPENSE PROJECTION

Description	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
<b>Site Improvements</b>										
Crack fill, seal coat, stripe asphalt paving				\$18,500					\$18,500	
Resurface asphalt paving						\$185,000				
Concrete flatwork repair				\$12,100					\$12,100	
Repair sections of concrete curb and gutter				\$10,125					\$10,125	
Common area drainage improvements		\$10,000					\$10,000			
Repair/replace wood fence around dumpsters								\$8,700		
Repair/replace portions of timber retaining walls		\$15,750					\$15,750			
Replace mailbox kiosks			\$2,100							
<b>Building Exterior</b>										
Replace roofing and gutters Phase I										
Replace roofing and gutters Phase II										
Exterior painting and siding/trim repair, including decks/balconies and pool building	\$393,000					\$393,000				
Replace wood balcony and entry walkway decking and railings									\$168,750	
Replace alleyway stairs exposed to exterior									\$52,000	
Replace pool pump room door										
Replace doors on pool bathrooms										
<b>Building Interior</b>										
Refurbish pool restrooms, fixtures			\$15,000							
<b>Mechanical, Electrical, Plumbing Systems</b>										
Replace pool building water heater									\$2,000	
Allocation for electrical/plumbing system repairs at pool bathrooms			\$8,000							
Allocation for buried private street utility repairs									\$20,000	
<b>Amenities</b>										
Re-plaster swimming pool surface								\$14,400		
Repair, re-coat swimming pool deck		\$13,600								
Repair/replace wood decking at pool										
Repair pool pump and filtration equipment		\$4,500			\$4,500			\$4,500		
Replace portions of pool furniture					\$3,500					\$3,500
Replace chainlink fence at pool									\$9,000	
<b>Totals</b>	<b>\$393,000</b>	<b>\$43,850</b>	<b>\$25,100</b>	<b>\$40,725</b>	<b>\$8,000</b>	<b>\$578,000</b>	<b>\$25,750</b>	<b>\$27,600</b>	<b>\$292,475</b>	<b>\$3,500</b>
<b>Totals including inflation:</b>	<b>\$528,159</b>	<b>\$60,699</b>	<b>\$35,787</b>	<b>\$59,806</b>	<b>\$12,101</b>	<b>\$900,505</b>	<b>\$41,321</b>	<b>\$45,619</b>	<b>\$497,919</b>	<b>\$6,137</b>

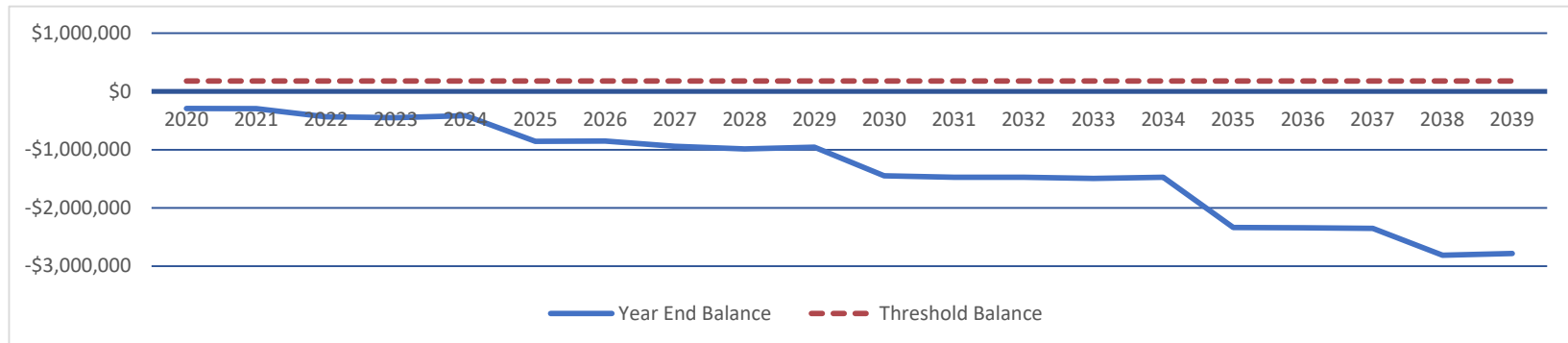
**EXPENSE SUMMARY**

<b>Total over term capital expenditure (un-inflated)</b>	<b>\$2,691,700</b>
<b>Total over term capital expenditure with inflation:</b>	<b>\$3,569,660</b>
<b>Average estimated annual capital expenditure with inflation:</b>	<b>\$178,483</b>
<b>Current Reserve Account Balance</b>	<b>\$65,373</b>
<b>Full Funding Balance</b>	<b>\$748,770</b>
<b>Percent Funded</b>	<b>8.73%</b>



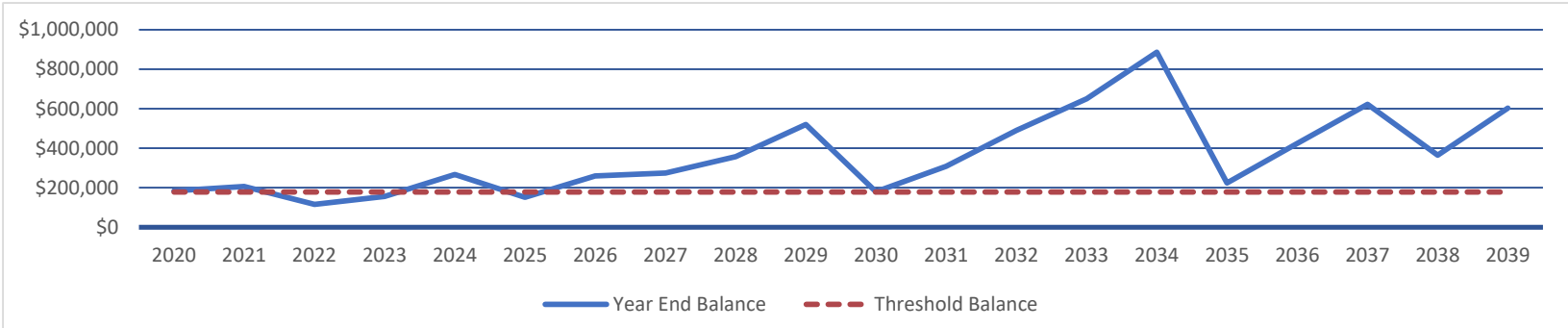
### Current Funding Analysis

Year	Starting Balance	Reserve Account Contribution	Average Per Unit/Month	Return on Investments	Repair Expenses	Special Assessments	Year End Balance
2020	\$65,373	\$36,103	\$23	\$0	\$394,500	\$0	-\$293,024
2021	-\$293,024	\$36,103	\$23	\$0	\$40,531	0	-\$297,452
2022	-\$297,452	\$36,103	\$23	\$0	\$176,905	0	-\$438,254
2023	-\$438,254	\$36,103	\$23	\$0	\$46,687	0	-\$448,837
2024	-\$448,837	\$36,103	\$23	\$0	\$3,939	0	-\$416,674
2025	-\$416,674	\$36,103	\$23	\$0	\$477,505	0	-\$858,076
2026	-\$858,076	\$36,103	\$23	\$0	\$30,747	0	-\$852,719
2027	-\$852,719	\$36,103	\$23	\$0	\$123,602	0	-\$940,219
2028	-\$940,219	\$36,103	\$23	\$0	\$82,625	0	-\$986,741
2029	-\$986,741	\$36,103	\$23	\$0	\$4,567	0	-\$955,205
2030	-\$955,205	\$36,103	\$23	\$0	\$528,159	0	-\$1,447,261
2031	-\$1,447,261	\$36,103	\$23	\$0	\$60,699	0	-\$1,471,856
2032	-\$1,471,856	\$36,103	\$23	\$0	\$35,787	0	-\$1,471,540
2033	-\$1,471,540	\$36,103	\$23	\$0	\$59,806	0	-\$1,495,243
2034	-\$1,495,243	\$36,103	\$23	\$0	\$12,101	0	-\$1,471,241
2035	-\$1,471,241	\$36,103	\$23	\$0	\$900,505	0	-\$2,335,643
2036	-\$2,335,643	\$36,103	\$23	\$0	\$41,321	0	-\$2,340,861
2037	-\$2,340,861	\$36,103	\$23	\$0	\$45,619	0	-\$2,350,377
2038	-\$2,350,377	\$36,103	\$23	\$0	\$497,919	0	-\$2,812,193
2039	-\$2,812,193	\$36,103	\$23	\$0	\$6,137	0	-\$2,782,227



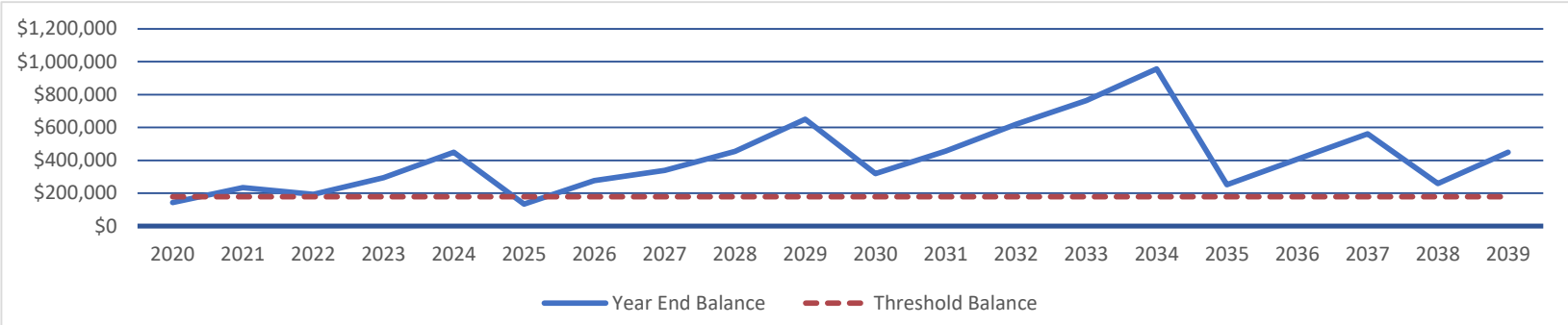
**Funding Alternative 1 - Increase to \$60,000, special assessments, and step fund every other year through 2034**

Year	Starting Balance	Reserve Account Contribution	Average Per Unit/Month	Return on Investments	Repair Expenses	Special Assessments	Year End Balance
2020	\$65,373	\$60,000	\$38	\$2,713	\$394,500	\$450,000	\$183,586
2021	\$183,586	\$60,000	\$38	\$3,046	\$40,531	\$0	\$206,101
2022	\$206,101	\$85,000	\$54	\$1,713	\$176,905	\$0	\$115,909
2023	\$115,909	\$85,000	\$54	\$2,313	\$46,687	\$0	\$156,536
2024	\$156,536	\$110,000	\$71	\$3,939	\$3,939	\$0	\$266,536
2025	\$266,536	\$110,000	\$71	\$2,235	\$477,505	\$250,000	\$151,266
2026	\$151,266	\$135,000	\$87	\$3,833	\$30,747	\$0	\$259,352
2027	\$259,352	\$135,000	\$87	\$4,061	\$123,602	\$0	\$274,811
2028	\$274,811	\$160,000	\$103	\$5,283	\$82,625	\$0	\$357,469
2029	\$357,469	\$160,000	\$103	\$7,694	\$4,567	\$0	\$520,595
2030	\$520,595	\$185,000	\$119	\$2,662	\$528,159	\$0	\$180,098
2031	\$180,098	\$185,000	\$119	\$4,566	\$60,699	\$0	\$308,965
2032	\$308,965	\$210,000	\$135	\$7,248	\$35,787	\$0	\$490,426
2033	\$490,426	\$210,000	\$135	\$9,609	\$59,806	\$0	\$650,229
2034	\$650,229	\$235,000	\$151	\$13,097	\$12,101	\$0	\$886,226
2035	\$886,226	\$235,000	\$151	\$3,311	\$900,505	\$0	\$224,031
2036	\$224,031	\$235,000	\$151	\$6,266	\$41,321	\$0	\$423,976
2037	\$423,976	\$235,000	\$151	\$9,200	\$45,619	\$0	\$622,558
2038	\$622,558	\$235,000	\$151	\$5,395	\$497,919	\$0	\$365,033
2039	\$365,033	\$235,000	\$151	\$8,908	\$6,137	\$0	\$602,804

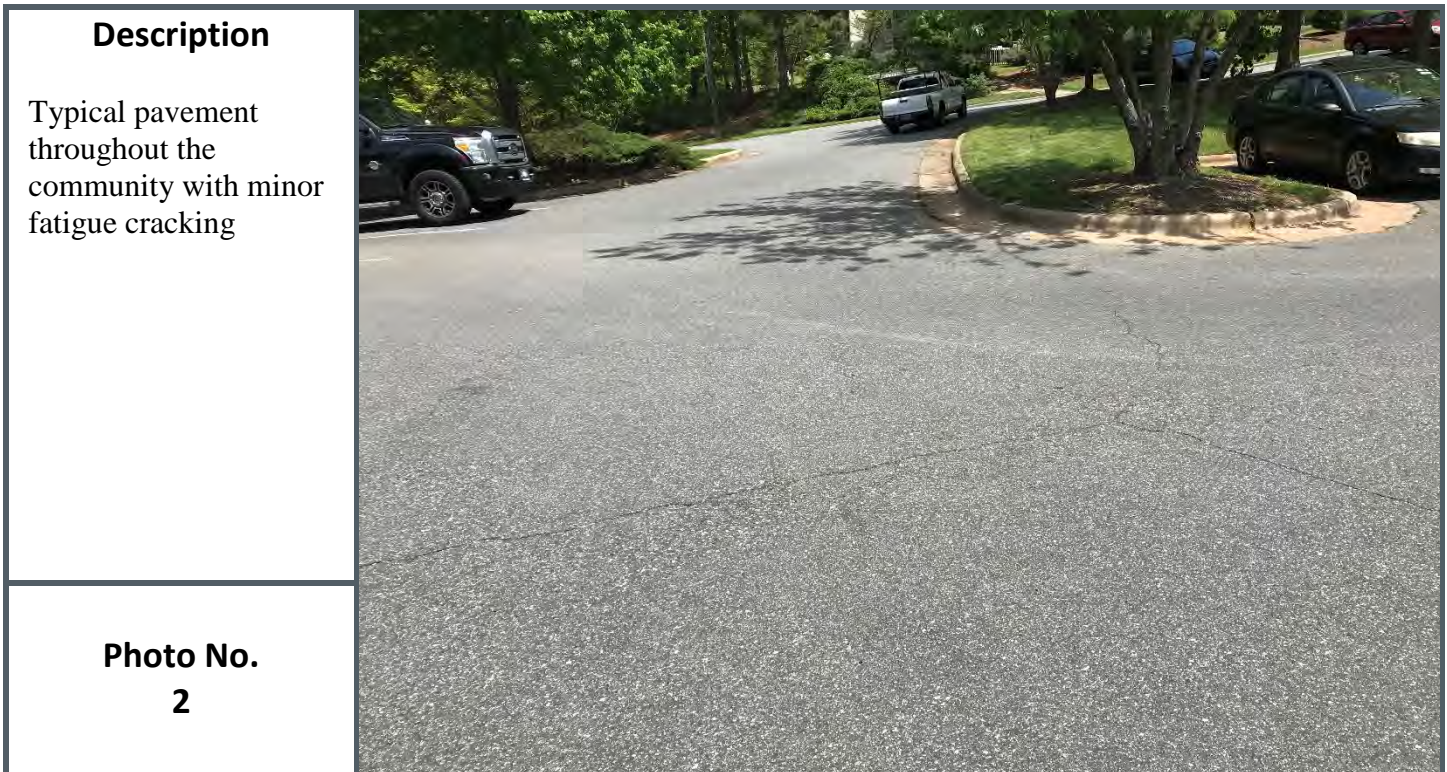


**Funding Alternative 2 - Increase to \$120,000, special assessment, increase by 6% every year through 2028**

Year	Starting Balance	Reserve Account Contribution	Average Per Unit/Month	Return on Investments	Repair Expenses	Special Assessments	Year End Balance
2020	\$65,373	\$120,000	\$77	\$2,113	\$394,500	\$350,000	\$142,986
2021	\$142,986	\$127,200	\$82	\$3,445	\$40,531	\$0	\$233,100
2022	\$233,100	\$134,832	\$86	\$2,865	\$176,905	\$0	\$193,893
2023	\$193,893	\$142,922	\$92	\$4,352	\$46,687	\$0	\$294,480
2024	\$294,480	\$151,497	\$97	\$6,631	\$3,939	\$0	\$448,668
2025	\$448,668	\$160,587	\$103	\$1,976	\$477,505	\$0	\$133,727
2026	\$133,727	\$170,222	\$109	\$4,098	\$30,747	\$0	\$277,300
2027	\$277,300	\$180,436	\$116	\$5,012	\$123,602	\$0	\$339,145
2028	\$339,145	\$191,262	\$123	\$6,717	\$82,625	\$0	\$454,499
2029	\$454,499	\$191,262	\$123	\$9,618	\$4,567	\$0	\$650,812
2030	\$650,812	\$191,262	\$123	\$4,709	\$528,159	\$0	\$318,623
2031	\$318,623	\$191,262	\$123	\$6,738	\$60,699	\$0	\$455,924
2032	\$455,924	\$191,262	\$123	\$9,171	\$35,787	\$0	\$620,570
2033	\$620,570	\$191,262	\$123	\$11,280	\$59,806	\$0	\$763,306
2034	\$763,306	\$191,262	\$123	\$14,137	\$12,101	\$0	\$956,604
2035	\$956,604	\$191,262	\$123	\$3,710	\$900,505	\$0	\$251,072
2036	\$251,072	\$191,262	\$123	\$6,015	\$41,321	\$0	\$407,027
2037	\$407,027	\$191,262	\$123	\$8,290	\$45,619	\$0	\$560,960
2038	\$560,960	\$191,262	\$123	\$3,815	\$497,919	\$0	\$258,118
2039	\$258,118	\$191,262	\$123	\$6,649	\$6,137	\$0	\$449,891



## APPENDIX B: PROJECT PHOTOGRAPHS



**Description**

Typical concrete  
sidewalks and curbing



**Photo No.**  
**3**

**Description**

Erosion around rip rap  
and inlet adjacent to  
building 3702



**Photo No.**  
**4**

**Description**

Erosion at timber retaining wall behind building 3804



**Photo No.**  
5

**Description**

Typical fencing around dumpster enclosures



**Photo No.**  
6

**Description**

Mailbox kiosk station



**Photo No.**  
**7**

**Description**

Roof covering on mail  
kiosk station



**Photo No.**  
**8**

**Description**

Rot damage at bottom-right of mail kiosk station



**Photo No.**  
**9**

**Description**

Typical condominium building



**Photo No.**  
**10**

**Description**

Wood entry walkway in front of building 3700



**Photo No.**  
**11**

**Description**

Wood stairwell in building alley



**Photo No.**  
**12**

**Description**

Wood decks on units



**Photo No.**  
**13**

**Description**

Water damage to siding at rear of building 3704



**Photo No.**  
**14**

**Description**

Typical rot damage  
throughout community



**Photo No.**  
**15**

**Description**

Roof patching



**Photo No.**  
**16**

**Description**

Pool area



**Photo No.**  
**17**

**Description**

Vegetation growth through concrete decking around pool



**Photo No.**  
**18**

**Description**

Wood decking at pool



**Photo No.**  
**19**

**Description**

Fencing around pool



**Photo No.**  
**20**

**Description**  
Roof on pool building



**Photo No.**  
21



**Description**  
Pool equipment room door



**Photo No.**  
22



**Description**

Pool pump and sand filter equipment



**Photo No.**  
**23**

**Description**

Water heater in pool equipment room



**Photo No.**  
**24**

**Description**

Men's restroom at pool area



**Photo No.**  
25

**Description**

Women's restroom at pool area



**Photo No.**  
26