RESERVE FUND STUDY

UNIVERSITY WOODS
FAIRBORN, OH

Prepared for:
UNIVERSITY WOODS CONDOMINIUM OWNERS ASSOCIATION
FAIRBORN, OH
AND
TOWNE PROPERTIES
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1.0 INTRODUCTION

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University Woods Condominium Owners Association, through Towne Properties Asset Management Company, authorized Criterium-Cincinnati Engineers to conduct a Building Evaluation and Reserve Fund Study for University Woods Condominium Owners Association, located in Fairborn, OH. Studies of this nature are important to ensure that a community has sufficient funds for long-term, periodic capital expenditure requirements. Anticipating large expenditures over an extended period of time through a structured analysis and scheduling process assists the Association in meeting financial requirements without increasing the service fees above permitted maximums, borrowing the funds, or levying special financial assessments to the owners.

Typically, a community association has two broad funding requirements: the general operating reserves and the capital repair and replacement reserves. In this report, we will focus on those items falling under the capital repair and replacement reserve criteria. We have projected a capital repair and replacement reserve for twenty (20) years. The first ten years are the most reliable. Such a study should be updated every three to five years.

This report is structured to analyze components of the community for which the Association is responsible and to assess a useful expected life and useful remaining life to those components. The anticipated scheduled repair or replacement of the component and the anticipated expense for the activity are then analyzed in conjunction with the current capital reserves funding program for the community. Funding program recommendations are made with the objective of limiting substantial cash excesses while minimizing financial burdens that can result from significant cash inadequacies.

This report is intended as a tool to determine reserve fund allocation requirements for the community, to manage future Association obligations, and to inform the community of future financial needs in general. This report has been prepared to benefit the property owners' knowledge. Some items beyond those of immediate concern may be discussed. Therefore, we recommend that the report be read entirety to fully understand all of the information that has been obtained.

2.0 EXECUTIVE SUMMARY

University Woods Condominium Associations consists of 18 two and three story buildings with a total of 51 units. The 18 buildings have at least ten design variations. Four of the buildings have cedar siding on the front and sides and T1-11 paneling on the rear. Ten of the buildings have aluminum siding with sections of brick veneer on the front side of the building and wood trim in other areas. Four additional buildings had their original aluminum siding replaced with vinyl siding. The Association is also responsible for asphalt parking lots, concrete sidewalks and privacy fences.

Current Funding Summary:

Reserve Analysis Summary:

Our analysis of the reserve fund has determined that the Association's reserve fund **is not** adequately funded. Since the fund is **not** adequately funded, we have included below three basic possible alternatives to the Association current funding program:

Current Funding Rate: $711.00 per unit per year

- **Alternative 1:** In this alternative analysis, the annual funding was increased every year by a fixed amount for a set number of years to obtain a reserve fund balance that was positive throughout the full 20 years of the study period and that had more than the estimated minimum required fund balance at the end of the 20 years. With this alternative, each unit's contribution would increase by $31.00 per unit per year from 2011 through 2023, resulting in an annual contribution of $1,116.00 per unit per year at the end of the 20-year time period of this study.

- **Alternative 2:** In this alternative analysis, the annual funding was increased every year by a fixed percentage for a set number of years to obtain a reserve fund balance that was positive throughout the full 20 years of the study period and that had more than the estimated minimum required fund balance at the end of the 20 years. With this alternative, each unit's contribution would increase by 3.7% per unit per year from 2011 through 2023, resulting in an annual contribution of $1,151.00 per unit per year at the end of the 20-year time period of this study.

- **Alternative 3**: In this alternative analysis, two special assessments were used to obtain a reserve fund balance that was positive throughout the full 20 years of the study period and that had more than the estimated minimum required fund balance at the end of the 20 years. With this alternative, each unit would be assessed $1,961.00 in years 2015 and 2020.

Addendum A lists estimated capital reserves from 2011 through 2030.

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Please note that funding alternatives are not restricted to the alternative methods included in this study. In fact, many different variations of the three basic methods presented in this study exist. If the Association desires further analysis of alternative funding methods, we can provide those services at additional cost.

Overall Property Condition Assessment and Recommendations:

The building and grounds are, generally, in good condition. Based on our observations, there are deficiencies that need special attention, as follows:

- About half of the asphalt parking areas are in poor shape and need immediate care.
- Most of the gutter downspouts empty directly next to the building foundations. Soil erosion was noted in places.
- Popped gutter nails and water stains indicated that gutter problems existed for many buildings.
- Some of the aluminum siding needs repair until it can be replaced with vinyl.

These issues are discussed in greater detail in Section 4.0 Reserve Analysis Details. In the photo pages, we have also included other issues that may be a concern to Association members even though they are not part of the reserves.

We highly recommend that the Association repeat the reserve analysis every three years. Each repetition of the reserve analysis, incorporating actual cost data in the analysis, improves the accuracy of the study projections. Events that were unanticipated in previous reserve studies that could impact the reserve fund can also be input into the new reserve study to improve projections. Likewise, reserve elements might have longer or shorter lives than projected, and adjusting the expected lives of these elements in the new study will improve projections. We recommend that the Association and its property manager work diligently to maintain files and records of the reserve component costs to help improve the fund analysis accuracy.

Other current and future events could also severely change reserve fund predictions. For example, the current economic conditions have increased foreclosures that have significantly impacted some association reserve funds due to reduced fund contributions. Associations may also have to absorb the cost of maintaining vacant units. In the past couple of years, petroleum costs rose rapidly in less than the three years we recommend between reserve studies. Petroleum costs severely impact the costs of all petroleum-based materials, such as asphalt roof shingles and roads. No doubt exists that we will be seeing an increase in petroleum costs when an economic recovery occurs. In fact, they have already increased in anticipation of a recovery. Cost data used in this reserve study could change dramatically in the future depending on such increases.

We did not include certain specific elements in this reserve study that are not traditionally part of reserve funding, such as fees the Association would not receive due to foreclosures. The Association could also potentially face large expenses that are totally unpredictable when this study was completed, such as pond dredging or drain line failures. We included contingency expenses as part of this study to cover such expenses. But, this funding might not fully cover unanticipated reserve expenses. We encourage the Association to keep the contingency funding to cover unanticipated reserve expenses and potential loss of reserve contributions.

Our reserve study also includes funding to replace elements that could have useful lives that are much longer than those commonly listed in useful life tables. Examples of elements whose real useful lives may be longer than their expected useful lives are masonry or stone veneers, retaining walls and concrete flatwork. Differences between an element's real and expected useful life could be due to many factors including use, environmental exposure, workmanship, quality of materials, design, etc. Even though this study's Annual Expenses worksheet might not show funds being spent on those items, the analysis allocates annual funding toward their replacement. In our analysis, we track each element's accumulated allocated funds to make sure that the reserve fund's balance does not drop below the total accumulated funds for all elements at the end of the study's 20-year period. We encourage the Association to track each element's funding balance to assure that funds accumulated for each element's future replacement are not spent prematurely.

3.0 PURPOSE & SCOPE

3.1 Purpose

This study's purpose is to determine a capital needs plan based on an analysis of the reserve fund. The plan is intended as a tool for the University Woods Condominium Owners Association to determine the allocation requirements into the reserve fund to meet future anticipated capital expenditures for the community.

3.2 Scope

This study follows the scope generally defined by Towne Properties Asset Management Company, Criterium-Cincinnati Engineers, 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 an on-site investigation of the buildings and grounds.

The guidelines used to determine which community elements to include in this study are based on the following general criteria:

1. The element must be common use or otherwise noted as the Association's responsibility to replace.
2. The funding for replacement should be from only one source, and not funded from another area of the budget or through a maintenance contract.
3. An element's replacement cost should be high enough to make it financially unsound to fund it from the operating budget.

. Association by-laws require that the reserve fund elements that are normally covered under other funding options, such as deferred maintenance. Painting and deck cleaning are examples of elements that are usually maintenance items, but which many Associations

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Our reserve study analysis includes the following association property:

- **Site:**
  - Asphalt roads, driveways and parking areas
  - Signage and lights
  - Landscaping
  - Concrete flatwork
  - Privacy fence and gates
  - Retaining walls
  - Drainage areas

- **Building Exterior:**
  - Gutters and downspouts
  - Exterior painting
  - Siding and trim
  - Brick veneer

The above list was developed from Association or Towne Properties Asset Management Company documents or input and our inspection of the site.

This study estimates the funding levels required for maintaining the long-term viability of the community. Our approach involves:

1. Examining Association equipment, buildings, site and facilities.
2. Predicting each element's remaining useful life and estimating how often they will need repair or replacement.
3. Estimating each element's repair or replacement costs in 2010 dollars.
4. Using data developed in Steps 1, 2 and 3 to project Capital Reserve balances for each of the study's 20 years.

The statements in this report are opinions about the present condition of the Association's reserve elements. They are based on visual evidence available during a diligent investigation of all reasonably accessible areas that are the Association's responsibility. We did not remove any surface materials, perform any destructive testing, or move any furnishings. This study is not an exhaustive technical evaluation. Such an evaluation would entail a significantly larger scope than this effort. For additional limitations, see Section 8.0.

3.3 Sources of Information

Onsite inspections of the property occurred on the following dates:

- February 4, 2010

The following people were interviewed during our study:

- Ms. Kathy Cappiello, Towne Properties property manager

The following documents were made available to us and reviewed:

- Site sketch
- No building construction documents were available

We based our cost estimates on some or all of the following:

- R.S. Means
- Our data files on similar projects
- Local contractors

4.0 RESERVE ANALYSIS DETAILS

Following are the financial data used in the reserve fund analyses:

Reserve Fund Beginning Balance: $80,000.00*
Reserve Fund Starting Date: January 1, 2011
Reserve Fund Ending Date: December 31, 2030
Reserve Fund Rate of Return: 1.5 %
Inflation Rate: 3.0%
Number of Units Contributing to Reserve Fund: 51
Current Annual Contribution Per Unit Per Year: $711.00
Minimum Reserve Funding in 2030: $35,000.00
***Based on $60,000 amortized to the end of 2010 at 1.5% interest less $11,125 for reserve fund expenses.**

The following table shows:

- The reserve elements included in this reserve study.
- Each element's assessed condition.
- Each element's current estimated replacement or installation cost.
- The number of years between each element's replacement or installation.
- The years that each element is expected to be replaced or installed.

Following the table is a brief assessment of the reserve elements and an explanation of how they were handled in the reserve analysis. Note that, although the current cost is used for each component, the reserve analysis adjusts this cost over time by an inflation rate input into the analysis. The reserve balance is also adjusted over time for the Association's investment rate of return, which is usually the approximate average interest rate of bank accounts, certificates of deposit or other reserve fund investments. Following are the condition ratings used in the table:

A—Acceptable: 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.

F—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 end of expected performance. Repair or replacement is required to prevent further deterioration or to prolong expected life.

P—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. Present condition could contribute to or cause the deterioration of other adjoining elements or systems. Repair or replacement is required.

R—Repair/Replacement Reserves - Non-annual maintenance items that will require significant expenditure over the life of the buildings. Included are items that will reach the end of their estimated useful life during the course of this forecast, or, in the opinion of the investigator, will require attention during that time.

All ratings are determined by comparison to other buildings of similar age and construction type. Further, some details of workmanship and materials will be examined more closely in higher quality buildings where such details typically become more relevant.

Reserve Element	Cond.*	Current Estimated Cost ($)**	Freq. of Replacement (Yrs.)	Expected Replacement Years
Site:				
Asphalt seal coat	P	$1,280	10	2016—2020, 2026—2030
Asphalt wear coat		$11,856	10	2011—2015, 2021—2025
Asphalt resurfacing		$25,220	40	2051—2055
Asphalt spot replacement		$1,010	Annually	As Needed
Signage & lights replacement	A	$362	Annually	As Needed
Landscape replacement	A	$800	Annually	As Needed
Drainage improvements	F	$750	Annually	As Needed
Concrete flatwork	A	$435	Annually	As Needed
Vinyl privacy fence replacement	A	$570	Annually	As Needed
Wood privacy fence replacement	F	$1962	Annually	As Needed
Retaining wall replacement	P	$2640	15	2014, 2024
Building Exterior:				
Roof replacement	A	$24,648	20	2020—2024
Gutter upgrade/replacement	F	$979	Annually	As Needed
Downspout upgrade/replacement	A	$685	Annually	As Needed
Exterior finish painting	F	$3,026	5	Annually
Vinyl siding replacement	A	$21,926	25	2016—2020
Wood siding replacement	A	$10,959	30	2019—2022
Aluminum siding replacement	A	$890	Annually	2011—2020
T1-11 siding replacement	F	$6,546	25	2016—2019
Brick veneer replacement	A	$12,729	40	2024—2028
Other:				
Reserve study	X	$3,500	3	2014, 2017, 2020, 2023, 2026, 2029
Contingency	X	$500	Annually	As Needed

*Cond. means Condition; **A** means **A**cceptable; **F** means **F**air; **P** means **P**oor; **R** means needs **R**epair/**R**eplacement soon.
**Current Estimated Cost is per Expected Replacement Year

Element Condition Assessments and Explanations:

This section contains explanations of the reserve elements included in this study. Please keep in mind while reading the explanations that assumptions and estimates are used that are based on average cost and expected useful life data from researchers. Many factors can affect the various elements' actual costs and lives. Further, the Association can choose whether to spend reserve funds on some elements and when to spend those funds. For example, an element may be replaced because of its appearance rather than actual failure. As independent investigators, our job is to evaluate all of the assets for which the Association is responsible and assure that the funds are available to cover reserve expenditures when and if they occur.

While some elements need routine work schedules to keep them in top condition, such as asphalt roads and painting, other elements do not have such routine work schedules. These latter elements have expected useful lives; but reserve funds are usually needed to replace parts of these elements before the end of their expected lives. One example would be a section of privacy fence needing to be replaced because it was broken. For some large expense items, such as siding, replacement at the end of their useful lives could dramatically affect the reserve fund and consequently the fund contributions each Association member will have to pay. The study software builds up reserve funds for all elements, even if only the year in which expenses occur are shown. Therefore, elements that do not last as long as they should would have some funding available for them. The Association has the choice to spend the available reserve funds each year or accumulate them to assure future coverage.

We have also included elements in the study that have useful lives that extend beyond the 20-year time period of this study. We include these elements in this study because the earlier in an element's useful life that reserve fund allocations can be collected for it, the less will be those allocations. Further, including these elements allows the reserve fund to accumulate funding for parts of these elements that are replaced prematurely.

All directions (left, right, rear, etc.), when used, are taken from the viewpoint of an observer standing in front of a building and facing it.

Site:

Asphalt driveways and parking areas

Asphalt materials need periodic work and some part of the asphalt is likely to need replacement annually. For roads and parking areas, we recommend applications of asphalt seal coats with one-inch wear coats alternating every five years. Since asphalt cost can be significant, we spread the costs of the work over several years, as do most associations.

Sections of this community's asphalt are degraded badly and in poor condition. Some areas appear to need work immediately, while the rest need work in the immediate future. One of the smaller parking areas appeared to be in better condition than the others and apparently received attention in the recent past. Towne Properties Asset Management Company acquired bids for both repairing and seal-coating the asphalt for all but this parking area. The cost for resurfacing and seal coating the latter parking area was estimated from the bid amounts. These bids and the estimated costs were totaled for both the repair and seal coating and split over 5 years beginning with the first repair in 2011 followed by a seal coating in 5 years.

Further, repeated applications of seal and wear-coats on the roads will eventually affect proper drainage. At that time, the asphalt should be removed, the base repaired and new asphalt installed. Even though asphalt repaving will likely occur outside of this study's timeline, we include it in the study to minimize its usually large cost impact on future reserve funding.

Even with proper seal and wear coat applications, sections of asphalt will likely need replacement each year. We included an estimated annual replacement cost of one per cent of the total asphalt area each year in the reserve analysis.

Signage and lights replacement

Over time, various signs and lights will need replacing. These elements do not have predictable replacement schedules; therefore, we include annual estimated funding as a percentage of the annual reserve fund contribution. In future reserve studies, this amount can be adjusted based on the Associations actual costs. The Association has the option of spending the funded amount each year or let it accumulate for larger replacement projects.

Landscaping

Over time, various landscaping elements, such as trees, will need to be replaced. As with the previous element, landscaping elements have unpredictable replacement schedules. For landscaping, we included annual reserve funding based on $100.00 per the estimated acreage of the Association grounds. In future reserve studies, this amount can be adjusted based on the Associations actual costs. The Association has the option of spending the funded amount each year or let it accumulate for larger replacement projects.

In many communities, we find landscaping or mulch that is too close to or covering the exterior siding or brick veneer. This community also has such concerns, for example where mulch is covering the lower part of the brick veneer. We recommend that mulch be at least six inches below the lower edge of the exterior finishes. Mulch too close to the exterior finishes allows an easy route for insects into the building's walls. Mulch covering the lower part of the brick veneer can also cover the wall's weep holes, in turn affecting proper drainage of the wall. Both moisture and insects can cause extensive and expensive damage, particularly if that damage is to the framing members. Moisture can also lead to mold growth that can be an additional health concern.

Drainage improvements

This community has drainage problems that are primarily related to downspouts emptying right next to the building foundations. At the least, improper roof drainage can cause soil erosion (examples in Photos 1 and 2). At the worst, it can cause structural problems due to soil erosion, such as cracked foundations. Excess moisture around the foundation also increases the possibility for water to get into basements. Emptying water onto paved areas is not a solution (as shown in Photo 3) because this water can travel under and percolate up through the asphalt or pond on pavements causing degradation or settlement issues (Photo 4), and slip hazards in winter. We recommend that roof drainage be removed to ten feet minimum and downhill from the foundation. A better solution would be to install drain lines to carry the water safely away from the buildings and other areas where it could cause problems.

We received reports that water intrudes into the basements of one building during heavy rains. We believe that this problem could be related to an undersized detention pond area (Photo 5). We did not have access to site drainage plans to know where drain lines were run; but if the footing drain lines are run to a main drain line, water backing up in the detention pond and then into the main drain lines could also back up into the footing drain lines and enter the basements. Another possibility could be water in the detention pond is periodically raising the local water table, causing water to enter the basements. We recommend further investigation into both the possible detention pond size and the water getting into basements. These issues were both beyond the scope of this study.

In some cases, improper grading can cause ponding in areas where it can cause damage (Photo 6), undermine or shorten the life of retaining walls (Photo 7), or direct water toward foundations (Photo 8), increasing the potential for water intrusion problems.

In the reserve study, we included $750.00 per year for drainage improvements. Surplus landscaping funding can be used for drainage problems, since the two are related in that landscaping firms often do drainage improvement work. We recommend that a master plan be developed for drainage improvements rather than making piecemeal improvements. Without a master plan, improvements in one area could cause or worsen problems in other areas or reverse improvements already made, wasting funding.

Concrete flatwork replacement

Concrete flatwork includes all the concrete work that is the responsibility of the Association, which for this community are sidewalks and curbs, but not stoops and patios. Concrete flatwork does not have a definite replacement period; but sections of concrete usually are replaced every year. For this element, the replacement cost for all concrete flatwork was estimated and one percent of that cost is included in the reserve analysis for annual replacement.

Most concrete is usually replaced more for appearance rather than for structural reasons. The Association therefore has the option of spending the funded amount each year or letting it accumulate for larger replacement projects. In prioritizing where to spend concrete replacement funding, we encourage the Association to first remedy potential structural or trip hazards, such as heaving or settled pavements that create unevenness, edges or changes in stair riser heights (Photos 9 and 10). Degraded or improperly installed concrete should have second priority (Photos 11 and 12).

This Association's concrete front stoops have soil settlement issues that have also contributed to sidewalk settlement. Eventually, the sidewalks will need replacing. However, the soil erosion and settlement issues need to be corrected along with sidewalk replacement. We believe that the settlement is due to improper backfilling and compaction of the soil during the construction process, although improper downspout drainage could also contribute to the problem. Correcting this problem requires installing and compacting soil under the stoops, which is complicated because of limited access due to the stoops. Although some firms claim these problems could be corrected by injecting grout under the stoops, these methods cannot assure that the voids are completely filled and grout injection can create its own problems. The only assured way to correct this problem appears to be to remove the stoops, and install and properly compact soil under the stoops.

Although the stoops are not part of the reserve fund, removing them to correct the soil settlement issues might also allow the correcting of another endemic problem with the stoop construction. The stoops appear to have been constructed with only a single foundation along the stoop center (Photo 13). Normally, porches and stoops are installed with foundations under at least both side edges and intervals in between, depending on their width. The current stoop construction has led to cracks developing along about the centerline of the stoops (Photos 10 and 13). Eventually, all stoops constructed this way could end up with cracks and some of these could fail structurally. If not outright failure, cracks open up paths for water to get into the concrete, which can further lead to freeze/thaw degradation of the concrete. The water can also reach the rebar in the concrete, causing the rebar to rust, expand and act as a wedge inside of the concrete.

Although the rear concrete patios are also not part of the reserve fund, we noted a number that had settlement problems, resulting in cracks (one of the worst shown in Photo 14). This issue might be related to the same improper backfilling and compaction problems during construction as the soil under the stoops. Improper gutter drainage could also be involved. However, other settlement issues might also be present, but that will not be evident until the concrete has been removed for replacement.

We did not include funding in the study for correcting the soil settlement issues under the stoops and patios. The Association could choose to use landscaping or contingency funding for this issue. Since the stoops and patios are not part of the reserve fund but soil settlement-related issues are a reserve fund concern especially since they involved sidewalk settlement issues, the Association needs to determine who is responsible for funding the corrections. If the issue is decided in a way that the reserve fund is impacted, changes can be incorporated in future reserve funds.

Privacy fences

The Association has two types of privacy fences. One type is a vinyl fence separating the patio areas. The other type is a wood privacy fence along one side of the property. Wood privacy fences have an expected useful life of about 15 years, while vinyl fences have an expected useful life of more than 25 years, depending on the manufacturer's warranty. However, some sections of fence will need replacing every year. The Association's wood fence will particularly need to have sections or posts replaced soon because parts of it are leaning and/or well-weathered (Photos 15 and 16). For the vinyl fences, we included the approximate funding in the study to replace one ten-foot section each year. For the wood fences, we divided the total length of the fence by the expected useful life and included funding to replace that much length of fence each year. This method allows all fences to be covered by the reserve fund within their expected useful lives while also building funding to replace sections of fence each year. The Association has the choice to use the annual funding or allow funding to accumulate for larger replacement projects.

The leaning sections of wood fence are a concern because some sections that are leaning appear to be relatively new. The leaning may be due to posts not being deep enough in the soil for the size of the fence face or type of soil. These factors should be reviewed before additional fence is replaced. The fence might also be leaning because it runs along a drainage swell in places (Photo 16). Saturated soil cannot support the same loads as dry soil. Further, some grades of pressure treated wood can rot if constantly exposed to moisture. If the fence is to remain where it currently is, then a grade of pressure treated wood should be selected that is rated for constant moisture exposure.

Retaining Walls

The Association has a limited number of retaining walls and most of them are constructed of railroad ties. All of the railroad tie walls are failing (Photos 3 and 7) and will need replacement soon. Because of the larger expenses being faced in the near future to replace asphalt, we delayed funding to replace the walls for three years in the study. We are not certain that the walls will last that long, meaning that the contingency funding might be needed to fund walls that fail prematurely.

Part of the reason for the walls failing appears to be due to their not having anchorage to resist lateral loads. Unlike stone or block walls which are usually installed in multiple layers or are tied together, railroad ties are normally only stacked. Railroad ties also have less width than block or stone. When used for retaining walls, railroad ties need anchoring into the soil they are holding back. But, railroad tie walls do not provide nearly the same service life as block or stone walls, which can have a useful life of over 100 years. For this reason, we recommend that the Association consider replacing the railroad ties with interlocking block or stone.

Building Exterior:

Roofs

Asphalt composition shingles need replacing about every 20 years. We recommend removal of the shingles down to the roof deck so that the roof deck and flashing can be inspected for damage. Further, shingles that are installed over other shingles have a shorter lifespan and add extra weight that the roof structure must support. In the reserve study, we included the cost to remove the old roof and install new roofing paper, shingles and flashing. The replacement costs for all roofs were totaled and divided over five years to spread the cost. The study does not determine which roofs need replacement or in what order. That decision is left to the Association.

We recommend that the roofs be regularly inspected for nail pops, leaks, lifted shingles and other problems. Correcting these problems as soon as they are found can help prolong the life of the roof and the roof deck.

We noted rust around the flashing of the chimneys of all buildings of the same style as 2148/2150 Chapel Dr. (Photo 17). This corrosion could be due to contact between the aluminum siding and the galvanized flashing. They could also indicate possible chimney cap flashing corrosion. If this metal rusts through, water can get down into the chimney chaise, causing moisture-related problems. These flashings should be inspected and replaced as needed. We recommend that these flashings and chimney caps be replaced whenever the roof is replaced.

Gutters and downspouts

The Associations gutters appear to have problems. We noted numerous gutter nail pops that could indicate deteriorating fascia boards (Photos 18 and 19). We also noted very dark water stains on many gutters, which usually indicates chronic overflow problems (Photo 19). Improper roof drainage can cause soil erosion around the foundation and soil splashing on exterior finishes, which can shorten the useful lives of the finishes as well as other moisture-related problem, such as rot. Photos 20 to 22 show examples of roof drainage problems.

Even though gutters and downspouts can have an expected useful life greater than 25 years, we believe the Association's gutter and downspouts need immediate attention due to the apparent widespread problems. We included funding in the study to replace one building's gutters and downspouts each year. The Association should determine which gutters to replace based on problem indicators, such as popped gutter nails, leaks and water stains that indicate chronic overflow problems. Some of the gutters and downspouts might be reused. Inspection of the fascia boards should be included with the work on the gutters.

Exterior finishes

In the study, we included vinyl, aluminum and T1-11 siding, brick veneer, and trim as exterior finishes. Some of these exterior finishes need periodic painting. We recommend painting or staining buildings every five years. The Association appears to have not kept up on all of its painting as well as needed, as shown by the extensive amount of peeling paint. We understand that some of this delayed work might be due to the expectation that the wood is either going to be clad or replaced. As explained later, we believe that these areas should be painted because we are recommending that replacement of the aluminum siding be delayed. Further, a layer of paint provides protection against water that gets through the cladding.

In the study, we totaled the estimated cost for painting or staining the relevant areas of all buildings and divided that total by five years. Therefore, funding for painting or staining buildings is included each year. We leave the decision as to which areas are to be painted to the Association. We also did not include funding for painting the aluminum siding, although funding for painting might be needed depending on the Association's plans for the siding, as explained next. We recommend that the Association develop a painting/staining plan to assure that all buildings are painted or stained on a routine schedule.

The Association should also assure that metal lintels in brick veneer exteriors should be painted. These lintels are often overlooked. If they rust, they can expand and cause extensive damage to the brick veneer.

The Association recently replaced aluminum siding on four buildings with vinyl siding and reportedly had plans to replace the rest of the aluminum siding on other buildings. We found the aluminum siding to be in fair condition. We found numerous places where the aluminum siding was damaged, missing, loose or discolored (examples in Photos 23 to 25); but the siding could still be functional for several years if it is properly repaired. Since the Association is facing large costs in the near future for replacing the asphalt, we recommend that continued replacement of the aluminum siding with vinyl siding be delayed.

In the study, we set aluminum siding replacement with vinyl siding to begin in five years and continue over the next five years. We also set the replacement cycle for this siding at 25 years, the approximate useful life for vinyl siding. For the buildings that have already had vinyl siding installed, we set the next replacement cycles in 21 and 22 years, with two buildings being completed each of those years. These buildings were also set to have 25-year replacement cycles.

Additionally, since some aluminum siding will still be in place for about ten years, we included funding in the study to replace 200 square feet of siding each of those ten years. We recommend that the Association continue to properly maintain the aluminum siding because it provides a weather barrier. Rain that gets past the siding can cause damage to the interior wall materials, which could be very costly to repair. The siding also helps block air flow through the wall, making the home more energy efficient and comfortable. The choice of where to spend funding for replacing the aluminum siding is left to the Association.

We were informed that the Association received no scrap value for the aluminum siding that was removed from the first four buildings to have it replaced with vinyl. When the rest of the aluminum siding is replaced, we recommend that the Association inquire about the siding's scrap value. The amount of money the Association gains from recycling the siding could be significant.

Cedar siding has a useful life of about 30 years, although with proper care it can last much longer. The siding on the buildings appeared to generally be in good condition, although we saw places that needed attention (discussed later). The current siding appears to be original. Because of its condition, we set its first replacement cycle to begin in 8 years, even though it is already beyond its useful life. We felt that the Association should delay replacement as long as possible because of the near-future expenses it faces. In this study, we totaled the cost to replace siding on all of the buildings and divided that total over four years so that about two buildings are completed each year.

As the Association is likely aware, cedar siding demands more maintenance than most other siding materials. Most important is that holes created in the wood, such as when a knot falls out or due to animal or insect activity (Photo 26), need to be repaired promptly to prevent water from getting inside the wall or providing an entry for pests. Also, caulk failures, such as splits, need to be monitored and promptly repaired to prevent water getting where it can cause damage. One location where caulk is often overlooked is the gap between boards (Photo 27). Other locations are places that are not easily visible.

All of the buildings with cedar siding also have T1-11 siding on their rear walls. T1-11 is a laminated material similar to plywood. It has an approximate useful life of 20 years, although improper installation can seriously shorten that life. In this study, we totaled the cost to replace this siding and divided that cost over 4 years so that about two buildings are completed each year. We set the replacement cycle to begin in about five years, although we noted wood rot and delamination that might require replacement of some of this siding sooner.

T1-11 is notorious for delaminating when exposed to excess moisture. The place where delamination is most likely is the joints between the ends of the siding and trim (as shown in Photos 28 and 29). Once this siding delaminates, it allows more moisture into the wood and it rots (Photo 30). As the wood rots, underlying materials inside the wall can be exposed to moisture, causing moisture problems inside the wall. Because of these problems and the costly damage that could result, we encourage the Association to replace the T1-11 with a more durable siding material, such as Hardiboard® or vinyl siding. We did not include funding for replacement with an alternative material, although the cost is comparable between T1-11 and other materials.

The brick veneer on the buildings appeared to be in acceptable condition. Brick veneer can have a useful life of over 100 years if properly maintained. However, the mortar usually has a much shorter life. In the study, we provide funding for repointing the brick mortar every 40 years, with the first cycle to begin in 13 years. In the study, we estimated the cost to replace all of the brick mortar and then divided that cost over 5 years.

One concern with the brick veneer is that we could not find any weep holes. Weep holes allow water that gets behind the brick veneer a drainage path. Brick veneer is constructed with a space between the brick and exterior sheathing, called a drainage gap. Water getting through the brick is supposed to flow down the face of the sheathing (or more accurately a weather barrier covering the sheathing) to a flashing at the base of the wall or above windows and out through the weep holes. Without weep holes, water can cause moisture-related damage inside the wall. Simply installing weep holes is not necessarily a solution because the flashing that is part of the drainage system might not have been installed, which means the water might pool behind the brick even if weep holes are installed. The base of the exterior walls should be monitored for moisture intrusion from inside the condos. Owners should be warned to look for water stains along the base of the wall or mold. Mold will usually look like a black or greenish stain on the baseboard or carpet. If these signs are found, further investigation should be sought.

We noted only a couple places with cracks; but these cracks apparently were repaired with something other than the proper mortar material. Using materials that are incompatible with the existing mortar could result in damage to the brick due to differences in expansion and contraction. Cracks in the brick and mortar should be repaired as rapidly as possible to prevent excess moisture getting behind the brick, particularly since the brick is missing weep holes. The repair material may also be used to monitor for additional settlement issues that caused the original cracks. If repaired cracks develop new cracks, additional investigation should be sought.

We found a number of places where wood trim was not flashed correctly or at all. This lack of flashing has allowed the unpainted side of the trim to be exposed to moisture, causing it to rot or curl (Photos 28 and 31 to 36 show examples). Moisture that gets behind the trim can also cause moisture damage inside the wall. The general rule for flashing is that it should be used anywhere horizontal trim and exterior finish materials meet, although exceptions exist. Caulk should not be used as a substitute for flashing.

The front door pilaster trim on many homes appears to have been installed before the stoop concrete was poured (as shown in Photo 37). This issue can expose the trim to excess moisture for extended amounts of time, resulting in rot. Trim needs to be installed above the concrete. A minimum ½-inch gap should exist between the wood and concrete and this gap should be filled with caulk.

We also noted holes in the trim boards where knots had fallen out or pests had damaged the wood (as shown in Photo 38). Holes in the trim should be filled as rapidly as possible to prevent moisture getting to unprotected parts of the wood or pests getting into the wood.

We believe that the Association should clad the wood trim board with vinyl or aluminum after the final siding type is installed. That is, the wood trim used with the aluminum siding should not be clad until the vinyl siding is installed. Otherwise, the Association might find that the cladding is not compatible with the new siding. Replacing the wood trim with vinyl or a composite material, such as Hardiboard®, would be a better alternative because the Association could recognize a cost savings due to lower maintenance. An alternative material might also eliminate the need for flashing.

We heard that the Association prefers the white corner and rear mid-wall trims. These trim can be replaced with more durable materials that provide a similar effect, such as different colored vinyl siding. In fact, the Association replaced the trim board on one building with a vertical vinyl trim of a different color (Photo 38); however we are concerned that if this siding is not the proper type, it could let water get behind the siding.

One of the electrical panel mounting panels was deteriorating (Photo 40). Other panels might be in the same condition. This panel will need to be rebuilt. We did not include funding for replacing the panel, but believe that adequate reserve funds are available for this work.

We noted water stains and possible corrosion on the eave trim in a number of locations (examples shown in Photos 41 and 42). These stains appeared to be in similar locations. We could not determine the reason(s) for the stains. We recommend that the eave trim be removed and these areas inspected for possible cause and additional damage.

Other:

Reserve Fund Study

We highly recommend that the reserve study be repeated every three to four years, particularly in uncertain economic times. In the reserve study, we include funding for a repeat study every three years.

Contingency Funding

We do not, and hopefully the Association does not, expect that every element which could impact the reserve fund has been included in this study. Nor do we expect to estimate exactly how much each element will cost and when it will need replacing or rebuilding. To assure that the reserve fund is adequately funded, we include annual contingency funding in our study. We arbitrarily included a contingency funding of $500.00 in this study, which is not based on any ratios, percentages, predictions or experience.

5.0 RESERVE ANALYSIS SUMMARY

Overview:

Using software developed by Criterium Engineers and KPMG Peat Marwick, we have analyzed capital reserves expenditures to project the needed annual reserve funding. The intent of this reserve fund projection is to help the Association develop a reserve fund that provides for anticipated replacement of reserve elements over the next 20 years. This projection takes into consideration a reasonable return on invested reserve funds and inflation. Please review this information thoroughly and let us know if any changes are needed.

The reserve elements included in this study were those that the Association and Towne Properties Asset Management Company identified or that we determined during our site visits as being covered by the reserve fund. The University Woods Condominium Owners Association should confirm that these elements are funded by the reserve fund.

This projection provides the following:

- A summary sheet that defines all the criteria used for the financial alternatives, including the assumed inflation rate and rate of return on deposited reserve funds.

- A table that lists anticipated replacements complete with estimated remaining life expectancies, projected costs of replacement, a frequency (in years) for when these items require replacement, and a projection based on this frequency.

- A table and graph that present projected annual balances versus capital expenditures based on your current funding rate and reserve balances, and alternatives to your current funding rate if the study projected that the reserve is not adequately funded. The graphs illustrate what effect the alternative funding methods will have over the study's twenty-year period versus the anticipated reserve expenditures. Care should be taken in comparing graphs because each graph's scale could be different.

We recommend that the Association maintain significant reserve fund balance to cover unanticipated expenditures and to avoid the need for special assessments.

Addendum A lists estimated capital reserves from 2011 through 2030.

We further note that funding alternatives are not restricted to the alternative methods included in this study. In fact, many different variations of the three basic methods presented in this study exist. If the Association desires further analysis of alternative funding methods, we can provide those services at additional cost.

6.0 CONCLUSION

We hope that this study addresses the Association's reserve fund projection needs. Please do not hesitate to call with any questions. Thank-you for the opportunity to be of assistance to you.

7.0 LIMITATIONS

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 Towne Properties Asset Management Company, University Woods Condominium Owners Association. Criterium-Cincinnati Engineers does not intend any other individual or party to rely upon this study without our express written consent. If another individual or party relies on this study, they shall indemnify and hold Criterium – Cincinnati Engineers harmless for any damages, losses, or expenses they may incur as a result of its use.

This study is limited to the visual observations made during our inspection. We did not remove surface materials, conduct any destructive or invasive testing, move furnishings or equipment, or undertake any digging or excavation. Accordingly, we cannot comment on the condition of systems that we could not see, such as buried structures and utilities, nor are we responsible for conditions that could not be seen or were not within the scope of our services at the time of the investigation. We did not assess the stability of the buildings or the underlying foundation soil since this effort would require excavation and destructive testing. Likewise, this is not a seismic assessment.

We did not investigate the following areas:

- Buried utilities or infrastructure
- Concealed structural members or systems
- Attic areas
- Any interior residential spaces

We do not render an opinion on uninvestigated portions of the community.

We did not perform any computations or other engineering analysis as part of this study, nor did we conduct a comprehensive code compliance investigation. 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.

In our Reserve Fund Analysis, we have provided estimated costs. These costs are based on our general knowledge of building systems and the contracting and construction industry. When appropriate, we have relied on standard sources, such as Means Building Construction Cost Data, to develop estimates. However, for items that we have developed costs (e.g.: structural repairs), no standard guide for developing such costs exists. Actual costs can vary significantly, based on the availability of qualified contractors to do the work, as well as many other variables. We cannot be responsible for the specific provided cost estimates.

We have performed no design work as part of this study, nor have we obtained competitive quotations or estimates from contractors as this also is beyond the scope of the project. The actual cost to remedy deficiencies and deferred maintenance items that we have identified may vary significantly from estimates and competitive quotations from contractors.

Respectfully submitted,

Matthew Klein, P.E.
Criterium-Cincinnati Engineers

Appendix A: RESERVE FUND PROJECTIONS

Appendix B: PROJECT PHOTOGRAPHS

Appendix C: PROFESSIONAL QUALIFICATIONS