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FOREWORD

One of the most important assets held by a common-property owner's association is its replacement reserve fund. The goal of the fund is to protect property values, not only for common areas, but also the individual properties within the community whose values depend upon the condition of the common assets. Reserve fund plans protect property by providing a methodology for replacement of deteriorating capital assets. The end result of a successfully implemented reserve fund plan is an increased quality of life for community residents.

1.0 INTRODUCTION

Moorings Cluster is a townhome community located on the north shore of Lake Anne in Reston, Virginia. It is comprised of 48 residential units in seven buildings.

The community was constructed in 1971-72. There are two private streets within the community: Moorings Drive and Waters Edge Lane. The street layout includes concrete curbs and gutters, concrete sidewalks, private driveway aprons, and 7 offstreet parking bays providing 48 spaces. In addition, there is one-side parallel on-street parking between parking bays.

Skip Sims conducted the field evaluation for this report on June 19, 2003. The weather was partly cloudy and the temperature was approximately 78 degrees F. Heavy precipitation in the form of rain had occurred in the days just prior to the visit, and grounds were wet from the recent rain. Although the pavement and walkways were generally dry, there was sufficient moisture to observe ponding and cracking where present. Common areas were generally clear of debris. The common assets appear to be in overall good condition.

Generally, our approach is to group appropriately related component replacement items into projects. This creates a more realistic model and allows a grouping time line that is more convenient to schedule and logical to accomplish. Please see the Table 1 Discussion, Column 18, for specific information.

2.0 VISUAL EVALUATION METHODOLOGY

The condition assessment forming the basis for this report was visual and non-invasive. We did not perform any destructive testing to uncover or expose hidden conditions. No operational testing of mechanical, electrical, plumbing, fire protection, or other internal systems was performed. No spaces were entered that were inaccessible or potentially hazardous. Code compliance, capacities and equipment adequacy for current loads were not addressed. Mason & Mason makes no warranty that every defect is disclosed. Our scope of work does not include an evaluation of moisture penetration, mold, indoor air quality or other environmental issues. While we may identify safety hazards observed during the course of the field evaluation, this report should not be considered to be a full safety evaluation of components.

Repair and replacement costs are based upon commonly accepted references and our experience with similar components installed in similar circumstances. Our opinions of costs are based on published construction cost data, experience with similar projects, information provided by local contractors and management personnel. Actual construction costs can vary significantly due to seasonal considerations, material availability, labor, economy of scale, and other factors beyond our control. Projected useful service lives presume a normal level of past, present and future maintenance. No warranties or guarantees of component service life expectancies are expressed or implied and none should be inferred by this report. Actual experience in replacing components may differ significantly from the projections in the Reserve Fund Plan, because of conditions beyond our control or that were not visually apparent at the time of the evaluation. This report is not a mandate, but is intended to be a guide for future planning.

3.0 FINANCIAL OVERVIEW

The Association is on a fiscal year of April 1 to March 31. Management reported that the reserve fund balance, including cash and securities, is projected to be **$53,000** on March 31, 2004. The community has requested that we use a 2.50% annual interest income factor, and we have used the standard 2.36% inflation factor in our model. The total expenditures for the twenty-year study period for both the Cash Flow Method and Component Method are projected to be **$247,381**.

3.1 Current Funding Analysis, Cash Flow Method (Table 3 & Graph): The current annual contribution to reserves is **$9,000**. At this level, the total for all annual contributions for the twenty-year study period would be **$180,000**, and the total interest income is projected to be **$8,216**. **Continued funding at this level results in the depletion of the reserve fund by 2010.**

3.2 Alternative Funding Analysis, Cash Flow Method (Table 3.1 & Graph): The alternative funding analysis provides the annual contributions necessary to maintain positive balances more appropriate for this type of community by raising the annual contribution to **$15,200** in 2005. The total for all annual contributions for the twenty-year study period would be **$297,800**, and the total interest income is projected to be **$36,598**. The reserve fund balance in the last year of the study (2023) is **$140,016**, or a **36%** asset base to balance ratio.

3.3 Alternative Funding Analysis, Cash Flow Method (Table 3.2 and Graph) raises the annual contribution to **$12,450 in 2005** and provides an annual escalation factor (contribution percentage increase) of **2.36%**. This alternative also maintains positive balances. The total for all annual contributions for the twenty-year study period would be **$303,194**, and the total interest income is projected to be **$31,596**. The reserve fund balance in the last year of the study (2023) is **$140,409**, or a **36%** asset base to balance ratio.

3.4 Funding Analysis, Component Method (Table 4 & Graph): This method of funding would require annual contributions ranging from a low of **$12,395** to a high of **$18,499** for an average annual contribution throughout the twenty-year study period of **$14,871**. The total for all annual contributions for the twenty-year study period would be **$297,420**, and the total interest income is projected to be **$38,058**. The Component Method model considers the current reserve fund balance in computing individual component contributions for current cycles.

The condition assessment and reserve fund plan is intended to be a working tool for Management and the Board for planning over the long term in order to help them understand the complex issues before them and make informed decisions. The Board of Directors, in consultation with Management and accounting professionals, should decide which of the two reserve funding methods is appropriate for the community.

4.0 ACCOUNTING METHODS

4.1 Cash Flow Method of Funding (Pooling): The balance of the reserve fund and corresponding annual contribution is determined by setting a level above a pre-determined minimum balance computed after the yearly expenditures. The minimum balance is typically expressed as a percentage, or ratio, of the total asset base to the reserve fund balance. The appropriate level is determined by a variety of factors including condition, age and complexity of the community. This method is becoming widely accepted in part because of advanced computer modeling but also because it can be a more efficient use of capital. This method is depicted on Table 3, Current Funding Analysis Cash Flow Method.

4.2 Component Method of Funding: Each component requiring replacement is funded at 100 percent of its replacement value on a ratio directly proportionate to its life cycle years. Funds set aside for replacement of individual components should not be used for the replacement of other components. Each component is allotted a percentage of the community's total reserve fund. In rare cases where a reserve fund is actually over funded, $0 will be displayed on the component tables, indicating that the component is fully funded for that cycle. This method of funding usually results in relatively high annual contributions and fund balances, but is considered to be the most conservative method for accruing reserve funds. This method is depicted on Table 4, Funding Analysis Component Method.

4.3 Interest Income on Reserve Funds: In order to replicate approximate financial conditions, interest income on reserve funds should be recognized. The financial tables have been programmed to calculate interest income based on a predetermined rate. This rate can be set at any level, including zero, for those desiring to not recognize interest. **Typically, a rate of 4.22 percent is used to reflect OMB's (Office of Management and Budget) projection for three-year T-Bill rates during the 2003 through 2012 time period**. The rate should reflect, as accurately as possible, the actual combined rate of return on all securities and other instruments of investment.

Interest calculations are segregated into three individual asset components, and the results are summed to generate the yearly interest accumulations. Interest accrued by the reserve fund assets are compartmentalized and calculated according to the following three categories; beginning reserve fund balance, interest accumulated upon the reserve fund contributions, and interest lost by the capital expenditures.

Interest earned on the yearly beginning reserve fund balance is calculated by compounding the beginning reserve fund balance on a monthly period by the interest rate. Interest earned for the reserve fund contributions are calculated by assuming that twelve equal installments are deposited, and interest is accrued and compounded monthly upon the accumulating balance. Likewise, the interest lost on the capital expenditures is calculated on the assumption that expenditures are deducted from the reserve balance on a monthly basis, and the interest that is lost is calculated upon the aggregate monthly balance. The interest income displayed on Table 3 and Table 4 is the summation of the beginning reserve fund interest accrual and the interest earned on the contributions minus the interest lost by withdrawing the capital expenditures. This method of calculation, while not exact, approximates the averages of the three principal components of a reserve fund for each twelve-month period.

4.4 Future Replacement Costs (Inflation): In order to replicate actual financial conditions, inflation on replacement costs should be recognized. The financial tables have been programmed to calculate inflation based upon a pre-determined rate. This rate can be set at any level, including zero. Typically, a rate of **2.36 percent** is used to reflect **OMB's average annual Consumer Price Index (urban) for the period of 2003 through 2012**.

4.5 Simultaneous Funding: This is a method of calculating funding for multiple replacement cycles of a single component over a period of time from the same starting date. Example: Funding for a re-roofing project, while, at the same time, funding for a second re-roofing project. This method often results in higher annual contribution requirements and leads to generational equity issues. Mason & Mason employs this method only in special circumstances.

4.6 Sequential Funding: This is a method of calculating funding for multiple replacement cycles of a single component over a period of time where each funding cycle begins when the previous cycle ends. Example: Funding for the second re-roofing project begins after the completion of the initial re-roofing project. This method of funding appears to be fundamentally equitable. This method is the standard by which Mason & Mason calculates funding.

5.0 REPLACEMENT METHODS

5.1 Normal Replacement: Components are scheduled for complete replacement at the end of their useful service lives. Example: An entrance sign is generally replaced all at once.

5.2 Cyclic Replacement: Components are replaced in stages over a period of time. Example: Sidewalks are typically replaced in sections rather than as complete units.

5.3 Minor Components: A minimum component value should be established for inclusion in the reserve fund. Components of insignificant value in relation to the scale of the community should not be included and should be deferred to the maintenance budget. A small community might exclude components with aggregate values less than $1,000, while a large community might exclude components with aggregate values of less than $5,000.

5.4 Long Life Components: Almost all communities have some components with useful service lives typically ranging between thirty and sixty years. Traditionally, this type of component has been ignored completely or included at full replacement value far beyond the twenty-year study period. Example: Storm water drainage systems have a useful service life of approximately forty to sixty years. However, they typically require expensive repairs sometime during their service life. Mason & Mason programming addresses these issues by calculating partial funding over a period of time to provide for anticipated localized repairs.

5.5 Projected Useful Service Life: Useful service lives of components are established using construction industry standards as a guideline. Useful service lives can vary greatly due to initial quality and installation, inappropriate materials, maintenance practices, environment and obsolescence. By visual observation, the projected useful service life may be shortened or extended due to the present condition. The projected useful service life is not a mandate, but a guideline, for anticipating replacements and for accumulating reserve funds.

6.0 UPDATING THE RESERVE FUND PLAN

In order for a reserve fund plan to remain a viable planning tool, it should be periodically updated. Changing financial conditions and widely varying aging patterns of components dictate that revisions should be undertaken every three to five years, depending upon the complexity of the common assets and the age of the community. The updating process typically involves a site visit to observe current conditions, adjusting fund balances and contributions, and recalculating the financial tables. This updating process insures the integrity of the reserve fund plan and contributes to the financial health of the community. Mason & Mason encourages communities to perform annual administrative updates. These updates include adjustments to the replacement schedules, annual contributions, balances, replacement costs, and interest income. This type of update does not require a site visit and can be a cost-effective way of keeping the Reserve Fund Plan current between major update cycles. Updates are particularly important for those communities employing the Cash Flow Method of accounting because it maintains the twenty-year outlook period. The Cash Flow Method does not consider expenditures beyond the study period. Those expenditures are brought into the study as it is periodically updated.

7.0 MAINTENANCE PROTOCOLS

The following preventative maintenance practices are suggested to assist the community in the development of a routine maintenance program. The recommendations are not to be considered the only maintenance required, but should be included in an overall program. The development of a maintenance checklist and an annual condition survey will help extend the useful service lives of the community's assets.

This section includes protocols for many, but not necessarily all, components in the study. Items for which no maintenance is necessary, appropriate, or beyond the purview of this report are not included in this section.

7.1 **Asphalt Pavement:** Pavement maintenance is the routine work performed to keep a pavement, subjected to normal traffic and the ordinary forces of nature, as close as possible to its as-constructed condition. Asphalt overlays may be used to correct both surface deficiencies and structural deficiencies. Surface deficiencies in asphalt pavement usually are corrected by thin resurfacing, but structural deficiencies require overlays designed on factors such as pavement properties and traffic loading. Any needed full-depth repairs and crack filling should be accomplished prior to overlaying. The edgemill and overlay process includes milling the edges of the pavement at the concrete gutter and feathering the depth of cut toward the center of the drive lane. Milling around meter heads and utility features is sometimes required. The typical useful life for an asphalt overlay is eighteen years.

7.2 **Asphalt Seal Coating:** The purpose is to seal and add new life to a roadway surface. It protects the existing pavement but does not add significant structural strength. A surface treatment can range from a single, light application of emulsified asphalt as a "fog" seal, to a multiple-surface course made up of alternate applications of asphalt and fine aggregate "chip seal." Seal coating of all asphalt pavements should be performed at approximately five-year intervals. The material used should be impervious to petroleum products and should be applied after crack filling, oil-spot cleaning, and full-depth repairs have been accomplished. Seal coating is a cost-effective way of extending the life of asphaltic concrete pavement. Seal coating is generally not scheduled for up to five years after an asphalt restoration project.

7.3 **Asphalt Full-Depth Repairs:** In areas where significant alligator cracking, potholes, or deflection of the pavement surface develops, the existing asphalt surface should be removed to the stone base course and the pavement section replaced with new asphalt. Generally, this type of failure is directly associated with the strength of the base course. When the pavement is first constructed, the stone base consists of a specific grain size distribution that provides strength and rigidity to the pavement section. Over time, the stone base course can become contaminated with fine-grained soil particles from the supporting soils beneath the base course. The most positive repair to such an area is to remove the contaminated base course and replace it with new base stone to the design depth. It is appropriate to perform these types of repairs immediately prior to asphalt restoration projects. Generally, this type of repair should not be required for approximately five years after an asphalt restoration project.

7.4 **Asphalt Crack Filling:** Cracks that develop throughout the life of the asphalt should be thoroughly cleaned of plant growth and debris (lanced) and then filled with a rubberized asphalt crack sealant. If the crack surfaces are not properly prepared, the sealant will not adhere. Crack filling should be accomplished every three to six years to prevent infiltration of water through the asphalt into the sub-grade, causing damage to the road base. It is appropriate to perform these types of repairs immediately prior to edgemill and overlay. Generally, this type of repair should not be required for approximately five years after an edgemill and overlay project.

7.5 **Asphalt Footpaths:** Transverse and longitudinal cracks should be cleaned of debris and plant growth (lanced) and filled with a rubberized asphaltic compound to prevent water infiltration. Cracks and deflection of the asphalt pavement can develop in the areas where tree roots cross the path. Tree roots should be removed and damaged areas repaired. An additional maintenance issue with footpaths is vegetation control. In areas where vegetation encroaches on the paths, both underfoot and overhead, visibility is reduced and personal injury can occur from low-growing branches. Vegetation control should be accomplished on a regular basis under the maintenance budget for safety considerations and to extend the useful service life of the pavement.

7.6 **Concrete Sidewalks and Driveway Aprons:** When sidewalks are cracked or scaled or sections have settled, the resulting differential or "tripping hazard" can present a liability problem for the Association if personal injury should occur as a result. Tripping hazards should be repaired expeditiously to promote safety and prevent liability problems for the community. Generally, where practical and appropriate, concrete element repairs and replacements are scheduled in the same years to promote cost efficiencies. Replacements are usually scheduled in cycles because the necessity of full replacement at one time is unlikely. Typically, damaged or differentially settled sections can be removed by saw cutting or jack hammer and re-cast. Concrete milling of the differential surfaces is sometimes an appropriate, cost-effective alternative to re-casting. Skim coating is not an effective repair for scaled or settled concrete surfaces and, over time, will usually worsen the problem. Cracks occurring in driveway apron slabs should be routed and sealed. Severely distressed slabs should be removed, the sub-base restored if necessary, and the slab replaced. In order to extend the useful service life of existing concrete in contact with the ground, a penetrating sealer to prevent moisture infiltration into the concrete may be applied. This process should be repeated at approximately five- to ten-year intervals.

7.7 **Concrete Curbs and Gutters:** Vehicle impacts, differential settlement, construction damage, and cracking and spalling of the concrete will eventually result in the need for replacement of some curb sections. A typical damaged or settled section, usually 10 feet in length, will be removed by saw cutting or jack hammer and re-cast. Replacements are scheduled in cycles because the necessity of full replacement at one time is unlikely.

7.8 **Entrance and Informational Signage:** The wood components of signs should be periodically cleaned of loose paint, lamination cracks should be re-sealed, and the sign repainted to maintain appearance. Out-of-plumb posts should be straightened and secured.

7.9 **Light Poles and Fixtures:** Outdoor lighting has a limited service life because of the accelerated aging process due to weather extremes. Remediation of the pole fixtures is a viable alternative to full replacement and would include painting the poles along with lamp housing replacement. Any poles observed to be out of plumb should be straightened. Periodic cleaning of peeling paint and rust, priming and re-painting of poles and fixtures will help extend the useful service life.

7.10 **Street Signage:** Metal perforated-post and pressure-treated wood post street signs generally require very little maintenance over their useful service life. Signage tends to fade due to environmental exposure. Cleaning of peeled paint, periodic cleaning of rust (metal posts) and repainting of wood and metal posts will maintain appearance. There is little that can be done with the signs except to replace them periodically. The wood components of entrance signs should be periodically cleaned of loose paint and repainted to maintain appearance. Out-of-plumb posts should be straightened and secured.

7.11 **Wood Retaining Walls:** Wood retaining walls should be inspected periodically for movement. A structural engineer should evaluate displaced or out-of-plumb wood retaining walls. Major settlement or deflection may require the rebuilding of that section of the wall. All vegetation, such as vines, tree limbs, and tree roots should be kept clear of the wall to prevent damage. Weep holes, for relief of water pressure behind walls, should be kept clear, and should be periodically inspected to ensure they are kept free of animals. As wood retaining walls age, depending upon the initial quality of the timber and the long-term environment of the wall, wood components will deteriorate.

7.12 **Bare Wood Components:** Bare wood components, both non-treated and pressure-treated, generally will achieve a greater useful service life and improved appearance if preventative maintenance is performed. Periodic pressure washing and sealing with wood preservative is recommended on all wood components. Rough edges and splinters should be sanded prior to sealing. Damaged, warped, or deteriorated wood components should be replaced as necessary. Generally, securing or repairing wood components with screws will provide a better fastening method than nails.

7.13 **Tot Lot Equipment and Outdoor Furniture:** Little maintenance is necessary on the newer style, pre-finished or painted metal play modules other than periodic safety inspections and repair, re-finishing, or replacement of any worn or damaged components. Bare wood components, both non-treated and pressure-treated, generally will achieve a greater useful service life and improved appearance if preventative maintenance is performed. Periodic pressure washing and sealing with wood preservative is recommended on all wood components. Rough edges and splinters should be sanded prior to sealing. Damaged or deteriorated wood components should be replaced as necessary. Generally, securing or repairing wood components with screws will provide a better fastening method than nails. Tot lot equipment should be inspected frequently for loose components, rough edges, splinters and safety hazards. Tot lot borders should be leveled periodically, and protruding border anchors should be made flush with the timber surface.

7.14 **Storm Water Drainage Systems:** Vegetation control around structures is required to prevent root damage, and to allow free flow of storm water. Sedimentation can result in reduced capacity in the long term. Typically, storm water drainage systems have a fifty-year estimated service life, and problems are not anticipated. However, as the systems age, it is prudent to maintain funding should problems occur. Inflow and outflow structures should be periodically examined for damage, leaks, or deterioration, and cleaned of debris to prevent clogging.

7.15 **Tree Trimming, Removal and Replacement:** As communities age, trees, both native and planted, may become problematic if periodic care is not accomplished. Trees may become damaged by weather or disease, or they may outsize their location. Proper, diligent tree trimming may alleviate future problems with regard to damage to adjacent structures. Proper tree trimming also helps maintain a healthy tree and may reduce windage in inclement weather. Proper tree trimming should not be confused with the common practice of topping, which produces, not only an unattractive tree, but also an unhealthy one due to weakening of the root structure. Tree root damage of asphalt footpaths and sidewalks is also a common problem. The best solution is re-routing the adjacent structure, if possible, to prevent future damage. If re-routing is not possible, tree roots causing the damage may be pruned back when replacement of the damaged component is accomplished. The practice of moderate mulching is beneficial for trees. However, repeated mulching against the tree trunk, year after year, without removal of the old mulch can eventually kill trees by trapping moisture against the bark, allowing fungi and insects to easily infiltrate the tree. Mulch should be placed around trees to the drip line, but should not be touching the bark.