

Retaining a Landmark

ALL THINGS FAIL over time. It may not be today or tomorrow, but chances are good critical components of your community are closer to the end than you think. Retaining walls—used throughout many communities to accommodate changes in grade, support structures or provide visual interest—often are overlooked.

Until they display fairly dramatic signs of distress, retaining walls can go unnoticed. They're frequently in areas not readily accessible or well traveled and often are covered with overgrown vegetation that obscures their true conditions. When they fail, the results can range from simply inconvenient to disastrous, which is why it's important to monitor these structures.

The Watergate at Landmark Community Association in Alexandria, Va., a leader in local community living, management and improvement even as it approaches its 40th birthday, recently took steps to restore and improve the retaining walls surrounding its central architectural feature—the outdoor swimming pool and entertainment complex.

The timber walls—constructed by the developer during the mid-1970s—created a tiered system that

overlooks the pool. The system included a small waterfall, large boulders for visual breaks and three large gazebos above the walls for residents to gather for cookouts, parties and other activities.

By 2010, portions of the walls were leaning, corners were separating and the timbers were deteriorating. These walls well exceeded their intended usefulness; typical service life for this type of wall is about 20 years. There wasn't any visible indication of drainage systems to control water pressure or water accumula-



Reserve Funding

A BOARD IS charged with protecting property values, which can be accomplished in part by planning ahead and reserving money for future big-ticket expenses, including retaining wall replacement.

Establishing a reserve fund requires a few steps.

■ **Get the owners on board.** Help them understand the importance of reserves.

■ **Conduct a reserve study.** Work with a manager, accountant, engineer and reserve specialist. A reserve study is a physical and financial analysis.

■ **Set up a component schedule.** Make a list of all common area components and the dates they are likely to need to be repaired or replaced.

■ **Select a funding plan.** There are four types: full, baseline, threshold and statutory funding.

■ **Decide how often to conduct a reserve study.**

Most studies should be updated or reviewed every one to five years, but this can vary based on the age and needs of the association. —CAI'S BOARD MEMBER TOOL KIT.

SEE SECTION 12: RESERVES. WWW.CAIONLINE.ORG/TOOLKIT.

tion behind the walls, indicating potential structural deficiencies too.

In addition, the walls became overgrown by unmanageable landscaping over the years. Instead of being a focal point of the pool area, the walls were hidden from view. Based on their age and condition, the walls needed to be replaced, but the community also wanted to maintain the layout and general appearance of the original design.

The customary approach would have been to remove the walls entirely and replace them with new assemblies, but their proximity to the pool and gazebos imposed a few major constraints. Instead, Watergate's engineer proposed three alternatives that wouldn't require demolition of the existing walls or risk damage to nearby elements from the work.

The community considered pressure-treated timber, segmental block and cast-in-place concrete, each of which has drawbacks. Timber walls require visible tieback anchors and have the shortest life expectancy. Segmental block walls would encroach upon the pool deck and create narrow walkways. Conventional cast-in-place concrete can be "industrial looking" and aesthetically undesirable for a highly visible location.

NutsAndBolts

After careful consideration of alternatives, the board selected new concrete walls because they would encroach the least on the pool deck. The board—in an effort to overcome appearance issues—decided to use form liners that create a timber texture on the face of the walls and tint or stain the concrete to emulate the color of wood.

The work would include new landscaping and an irrigation system. The board also wanted to replace the original

water feature with a new, more dramatic free-falling waterfall.

Once the board had the design and scope of work in mind, it solicited proposals from prequalified contractors and interviewed bidders. The board selected its contractor, and the project began with removal of existing oversized and overgrown vegetation.

After the area was cleared, more than 100 tiebacks were used to anchor the new walls. Some were installed to depths of

more than 60 feet. The tieback shafts were capped with brackets, which were encased in the new concrete walls.

The community also needed a customized concrete mix and placement technique because the location and configuration were difficult to access. The concrete had to be pumped in from various locations, including neighboring properties.

After demolition of the original waterfall, steel reinforcement was placed to form the rough shape of the catch basin, waterfall and feed pools. Piers were installed to create a solid foundation for the structure and associated items. The contractor then used shotcrete, a type of concrete formulated for placement with pneumatic hoses, to form the waterfall with intricate shapes and details. Finally, boulders sourced from local quarries were placed within and around the waterfall for dramatic effect.

The landscaper went to work following heavy construction and installed a variety of plantings to provide color throughout the year. New lighting features were added, and the picnic areas also were updated.

The transformation of the area was astounding. What was an overgrown, unsightly and potentially dangerous area is again a focal point. With this project, Watergate at Landmark was able to restore a distinct feature and ensure the area serves its intended purpose for decades.

While not all retaining walls are as visible as Watergate's, community associations need to monitor their conditions. The service lives of the materials used for the construction of retaining walls vary greatly but all require occasional inspection. No matter what kind of material is used, a properly designed drainage system is essential to control water behind the walls and reduce pressure on the walls. Unfortunately, these provisions are lacking or missing entirely in many instances.

Communities have several options for retaining wall maintenance and repair. As with all major repair projects, a qualified engineer can tailor a design to meet your needs and follow the project through from concept to completion. **CG**

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