St. Mark's Church Historic Restoration

By Dave Clark, Tim Crawford, and Mark K. Howell

Built in 1888, St. Mark's Church in Catonsville, MD, is a treasured place for many in the community. Generations of families have called the church home and have come to appreciate the rustic charm of the structure. With a footprint of 80 x 200 ft (24 x 61 m), the two-story building is constructed of granite and masonry—typical of the era in which it was built. The structure is trimmed with wooden doors and windows, as well as wooden soffits, softening the look of the concrete and stone. During the structure's history, side naves and a front foyer were added using brick masonry. Today, coated stucco covers the side naves and an ornamental stucco coating surrounds the entire building—covering the original brick.

Despite it elegance and charm, by the turn of this century, age had taken a toll on this historic treasure. With no significant maintenance or repair completed in its history, St. Mark's Church was in need of some care.

Treasured Home in Need of Repair

Recognizing the need to preserve this beloved structure, the Archdiocese of Baltimore contacted a restoration contractor who had performed similar repair projects for them. A scope of work was presented to the contractor for replacement of the gable copingstones, random stone pointing, repair and coating of the ornamental limestone stucco, and crack repairs.

The contractor's first task was a visual inspection, which included walking around the structure at ground level with binoculars to check mortar joints, the condition of the faux limestone covering the masonry façade, and the condition of the gable copingstones. Mortar joints were scraped and sounding techniques were used to determine their condition.

A high-reach man lift was used to survey other areas that were not readily visible from the ground. This task included more tapping and sounding, as well as a significant review of the copingstones. Interestingly enough, in contrast to the proposed project scope of work, the contractor determined that the copingstones were in good condition. The inspection, however, identified a need for a great deal of tuck pointing on the masonry (Fig. 1). Repairs were also needed for certain portions of the woodwork (Fig. 2) and significant patching was necessary for the limestone (Fig. 3). It was also determined that there was much more deterioration in the mortar joints and the ornamental stucco repair work than originally scoped, whereas the blue stone for the coping was not as deteriorated as initially thought. The good news, however, was that the deterioration was caused by age. No defects in materials were recognized; rather, it was simply an old building that had not been maintained.

Recognizing the importance of making the best use of the Archdiocese's limited funds, the contractor redefined the scope of work based on the items that needed the most attention. They then presented this

Fig. 1: Typical existing condition at deteriorated masonry joints

Fig. 2: Pre-existing wood trim condition

information to the Archdiocese, expecting the contract to be cut in half for performance of the work at-hand. The goal was not to grow the scope of work, but rather to realign the allocated dollars so that the owner would get the most benefit for the money. The owner, however, not only approved the new scope, but also decided to add work based on the findings.

The new scope involved repairing deteriorated mortar joints and spalled ornamental stucco. The mortar joints had been in need of maintenance for several years, and a recent, substandard repair attempt was found at the ground level. The prior maintenance attempt was performed using a hard, inappropriate mortar for repointing of the stone. The contractor's alternate approach involved matching new mortar material in color and strength to the original mortar material. With regard to the ornamental stucco, random areas were spalling off of the granite and brick sub-base. The contractor recommended the removal of the loose material followed by a process during which they would set mechanical anchors in the substrate, apply mortar, carve ornamental details, and stain the stucco to blend all existing sections with the new repair areas (Fig. 4).

Key Considerations

With a redefined and more appropriate scope of work, the contractor set out to revive the aesthetic appeal of St. Mark's Church. From the project onset, coordination with the pastor and the congregation was crucial. Most of the work to be completed was located on or around the entrance to the church—a part of the structure that many people shared an attachment to. In fact, the pastor and congregants made their voices heard with regard to the importance of keeping the same look and feel of the entrance, as it symbolized much more than just an entry point. It also was crucial to ensure that the repairs did not result in damage to any of the other areas of the structure.

The safety of the people using the structure on a daily basis was another key consideration. Specific safety concerns and methods for addressing these items were planned with the church pastor, the operations manager, and an Archdiocese representative at a preconstruction conference. Scaffolding was erected at the main entrance to the church in a manner that still allowed access to the structure during the work week (Fig. 5). Furthermore, there were times when the area had to be cleaned up in order to accommodate larger groups of people, such as a funeral. Throughout the project, communication with the church staff and the congregation was important not only for safety but also for the morale of the church family.

Another factor in the success of the project outlined early in the process was the necessity of carefully picking the materials and tools. Because the repair work was being preformed on a historic building, it was vital to avoid damaging the surrounding areas of the building. Power tools could only be used in limited circumstances. Hammers, chisels, and other manual tools were used primarily.

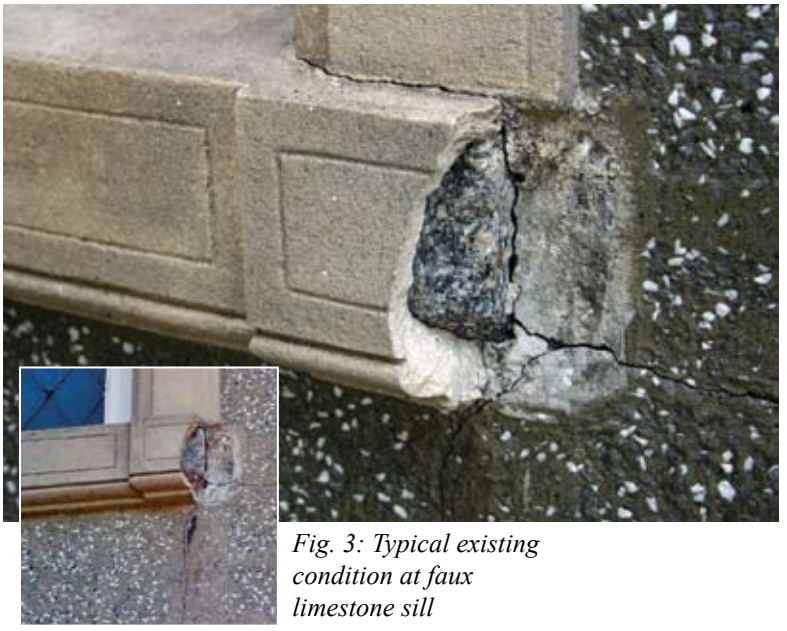

Fig. 3: Typical existing condition at faux limestone sill

Fig. 4: Pin installation for faux limestone repair

Fig. 5: Scaffolding erected to help ensure safety

Selecting the Right Materials and Methods

There was an extraordinary amount of up-front effort necessary to ensure that the appropriate materials were selected for this project. The contractor went to great lengths to select material that would not only repair the structure and its various components, but also complement the existing materials and provide durability. This involved many meetings with vendors—specifically companies that specialize in historic restoration materials for stone and other historic structures, reviewing samples and performing mock-ups and tests. After many trials and sample reviews, the best material was selected for repair of the limestone and capstones. For the coating, the contractor evaluated a wide range of products—including acrylics and elastomerics. The final selection was a mineral-based coating that is compatible with the substrate and extremely durable.

Special care was taken to find the right mortar color. The original mortar joints had been dyed with India ink and had faded within the first couple years of being placed on the building. Consequently, it was very difficult to match the new mortar to the color of the existing mortar because different areas had varying amounts of fading. After much evaluation, the contractor selected a mortar appropriate to the repair. Three other mortar colors were chosen for other repair locations such as those made to the stucco and the Pennsylvania Bluestone gable capstones.

In addition to the optimal materials, it was important that the repair methods be performed by highly skilled craftsmen. Therefore, a small, committed crew was selected for the project to ensure quality and consistency.

Fig. 6: Repaired sill prior to coating application

Fig. 7: Repaired pointed mortar joints with high-grade mortar material

Repairs

The actual repairs began with the cleaning of the gable capstone, which was then spot repaired with a bluestone repair mortar. The cross-joints were sealed with a lead weather-cap and the coping-stones were then sealed with a natural stone treatment. The spalled and deteriorated areas of ornamental stucco detail were repaired using a premium grade stone repair mortar and then these details were cleaned with an architectural biocide and mild detergent to properly prepare the surface. They were then coated with a mineral stain that was chosen because it allows vapor permeability and maintains the stone-like appearance of the details while preventing further water infiltration and subsequent deterioration.

Several mortar samples were made in order to find the right color mixture for the deteriorated mortar ribbon joints and the random joints needing repointing. After placing samples on the wall and evaluating color after a week of weathering, the contractor selected a high-grade mortar material made specifically for restoration applications (Fig. 7).

The granite steps at the front entrance of the church were then cleaned, repointed, and restored. They also coated two sets of concrete steps that were on either side of the entrance. Additional repairs were made to the cracks in the stucco by removing the cracked areas and filling them with a specialty repair material that matched the color and texture of the stucco.

Another repair area involved the wooden trim and details, including doors and soffits, which had rotted in various locations. New wood was installed in those areas, and the wood in all of the locations was coated with an industrial-grade exterior paint. The contractor also replaced the protective glass that covered the stained glass windows. To achieve an aged appearance that matched the existing glass, the new pieces were kiln-fired.

The gable cross was removed, stripped, regilded, and replaced, while the iron straps holding the cross and the kingpost were coated with an epoxy primer to prevent rust deterioration.

Finally, several expansion joints between the main body of the church and the sanctuary were recaulked using a silicone urethane hybrid sealant. This high-grade specialty sealant was selected because it provides more durability than normal urethane products along with increased elasticity and elongation—resulting in greater compatibility with any existing urethane sealants.

Project Success

Despite the significant change in scope, the project was completed according to the revised schedule, within the original budget, and with no OSHA recordable incidents.

Fig. 8: Completed front façade of St. Mark's Church

St. Mark's Church

Owner
Archdiocese of Baltimore
Baltimore, MD

Project Designer
Archdiocese of Baltimore
Baltimore, MD

Repair Contractor
Structural Preservation Systems, Inc.
Elkridge, MD

Material Supplier
Cathedral Stone Products
Hanover, MD

Many involved in the repairs at St. Mark's Church share in their excitement of a project well done. Not only did the repair contractor provide the best solution for the owner through the rigorous selection of materials and methods, but they also helped ensure value to the owner by better defining a scope of work that would add the most value to the structure. Although not huge in terms of dollars, the restoration of St. Mark's Church was great in terms of the impact made on those that call St. Mark's home (Fig. 8).

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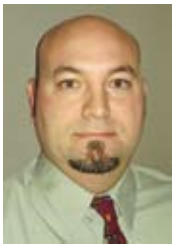

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