St. Bernard's Episcopal Church

BERNARDSVILLE, NJ

Historic Building Architects, LLC (HBA) specializes in architecture, historic preservation and materials conservation to assist owners and stewards in the maintenance, interpretation, and adaptive use of historic public buildings. Beginning in 2004, firm principal Annabelle Radcliffe-Trenner, AIA, RIBA, LEED AP lead an expert team of consultants on the reconstruction and rehabilitation of St. Bernard's Episcopal Church after a devastating fire. For their efforts, HBA and their team were awarded a 2012 Faith & Form Merit Award for Restoration from the Interfaith Forum on Religion, Art and Architecture (IFRAA).

Appreciating the History

St. Bernard's Episcopal Church was designed in 1897 by Napoleon Le Brun & Sons, one of America's most significant turn-of-the-century architectural firms. Among Le Brun's most important buildings are the Academy of Music and the Cathedral Basilica of Saints Peter and Paul (both in Philadelphia), as well as the landmark Metropolitan Life Insurance Building in New York City. Founded in 1841 in Philadelphia, the firm moved some 20 years later to New York, where it designed many of the City's fire company buildings and engine houses. When the plans for the church were first published in 1897, the Somerset Record newspaper commented: "When completed, there will be few prettier edifices in New Jersey, either from an architectural point of view or from the beauty of its location."

An 1897 rendering of St. Bernard's Church captures the rural English Gothic style the church still maintains.

Enduring "Trial by Fire"

In the Fall of 2004, the church suffered a major fire that damaged much of the original historic fabric on both the interior and exterior. When fire companies arrived, 40-foot-high flames were seen shooting out of the tower windows. This tragic fire was probably caused when cloths being used to shellac new furniture in the sacristy were placed in an open trash-bin and apparently combusted spontaneously. This was not the church's first encounter with disaster; in 1957 an electrical fire in the tower caused near identical damage to the fire in 2004. By the time this fire was brought under control and extinguished, the church had sustained several million dollars of damage.

Responding to Disaster

A rapid, far-reaching, and well-coordinated response guided by Historic Building Architects, LLC saved a great deal of the invaluable historic fabric. This response was possible because, shortly before the fire, the parish had assembled a comprehensive consulting team whose original mandate

was to prepare a preservation plan, but in addition took several critical steps to maximize the chances of a full and authentic restoration. For example, the remaining stained glass windows were removed within a week and cleaned immediately to prevent corrosive carbon damage to the glass. A dehumidification unit was installed to prevent the wood floors from suffering water damage. Interior scaffolding and shoring were erected to support the roof structure, and a tarp was placed over the open roof to prevent further damage that would have resulted from winter storms. These and other well-timed actions saved a good deal of the historic fabric that had not been ruined by fire and water damage.

Sharing a Preservation Philosophy

A project as complex as this requires a preservation philosophy that the myriad of consultants can understand and embrace. Thus, HBA developed a relatively simple philosophical approach: to stabilize immediately damage that had occurred; to prevent further deterioration; to retain, clean, and restore as much original historic fabric as possible; to integrate in the most discreet manner possible the upgrades to the building in order to allow it to move forward for another 100 years; and—most important—to insure that this architectural jewel be restored sensitively, expertly, cost-efficiently, and authentically.

Interior View of St. Bernard's Church after extensive restoration and reconstruction.

Non-Destructive Testing

A large portion of the architecture is the roof structure, with arched heavy timber trusses forming a king post at the center. Two critical concerns were the extent of the fire damage and the degree to which the wooden truss system might have been compromised by intense heat from the fire. HBA employed a wood scientist to make infrared x-rays to determine the truss construction; he also performed resistance drilling where wood rot along the eaves was suspected. These innovative detection techniques, along with the nature of the collaboration among the consultants, informed the stabilization approach and became the basis of a paper presented at an international conference on non-destructive testing held in Varena, Italy in September 2008.

Managing the Structural Stabilization

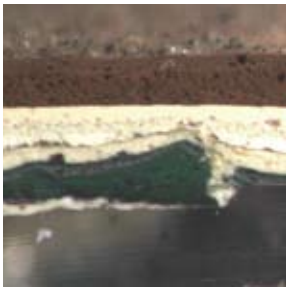
The findings from the extensive non-destructive testing allowed the structural engineers to determine the precise level of intervention needed to stabilize the truss structure. The x-rays uncovered a truss system made up of small structural members, all of which needed to be reinforced

to insure the stability of the roof framing. Plates were custom designed and carefully vetted by HBA to insure that they fitted as discreetly as possible. The engineers were able to preserve a large amount of the partially burnt framing, which was painted once the reinforcement plates had been installed. The structural stabilization also included the use of recycled wood for the replacement of sill plates where there had been extensive damage.

A Myriad of Architectural Materials

From its earliest years, the church has been characterized by the multitude of interior and exterior materials, all carefully designed and placed by the architects to create a unique, significant, and uplifting architecture. Floor finishes alone include mosaic tile, marble, and wood, while other finishes include limestone, cahn stone, quarry-faced sandstone, and decorative molded plaster. The ceiling and roof finishes include three colors of slate, decorative metal straps, coffered wood, and decorative carved wood and plaster cornices. The wood species used include eastern white pine, spruce, red oak, southern yellow pine, and bald cypress, as well as decorative faux-wood painted finishes on the wainscoting. Developing preservation and cleaning techniques for the variety of materials necessitated extensive material analysis and testing.

Performing Material Analysis



The in-house material conservator at HBA performed a comprehensive material analysis of the church's many finishes and applied materials. This included mortar analysis and replication for the restoration of the exterior masonry in addition to paint analysis and the development of photomicrographs to determine the original historic colors and shellac varnish finishes. The original exterior colors were identified (seen as green and then restored on the doors and window frames, while the decorative faux wood was restored on the interior wainscoting.

Cleaning the Historic Fabric

The many different architectural materials necessitated a large variety of cleaning techniques to reverse the fire damage. HBA undertook a comprehensive finish analyses and a cleaning test program, to develop several specialized cleaning techniques for the project. For example, the plaster walls were low-pressure cleaned with fine powder to remove carbon from the fire and at the same time retain the delicate textured plaster finish. Other cleaning techniques included poultices custom-made to remove carbon, gels to remove soiling, and a variety of customized detergents, all of which were carefully tested on each surface in advance to ensure good, safe results.

Restoring the Stained-Glass Windows

The fire damaged all of the stained-glass windows, some of them severely, especially traumatic in light of the superb quality and rarity of the windows. The exquisite rose window in particular, designed over a century ago by the great English stained glass studio of Clayton & Bell, was nearly a total loss. Just two days after the fire, the architect salvaged small fragments of the rose window from a dumpster. These fragments were later used to guarantee fidelity of color and clarity in the reconstruction of the window. A photograph of the stained glass window was enlarged and perspective corrected to the size of the opening. Along with the salvaged fragments and historical information provided by the Victoria and Albert Museum in London, this template proved essential to recreating the rose window, which shines once again in the main sanctuary. The other stained glass windows removed after the fire were cleaned and reinstalled.

Restored stained glass windows in the nave with new LED light fixtures.

Upgrading the Building Systems & Improving Access

As part of the restoration, the parishioners wanted to upgrade the heating, cooling, and lighting systems, all the while improving emergency egress and accessibility. A lighting consultant developed a concept lighting design to conceal the new LED fixtures behind the trusses from the main doors to illuminate the sanctuary. New heating and cooling equipment was discreetly installed along the exterior walls and the electrical services were upgraded, including a new fire detection system. New organ lifts were designed by HBA in keeping with the historic character of the interior to replace those lost in the blaze. The chancel floors were reconfigured to provide access from the exterior to the chancel level while a new barrier-free exterior door on the south transept provides improved safety egress. In addition, a barrier-free bathroom was designed and installed as part of the restoration of the south transept.. As a result of these and other sensitive design solutions, the entire first floor of the church is now completely accessible.

Project Team

Architect & Material Conservator
Historic Building Architects, LLC

Structural Engineer
Robert Silman Associates

MEP Engineer
Princeton Engineering Group, LLC

Wood Scientist
Anthony & Associates, Inc.

Stained Glass Contractor
The Art of Glass

Stained Glass Consultant
Femenella & Associates, Inc.

Cost Estimator
Daedalus Projects

General Contractor
Schtiller & Plevy