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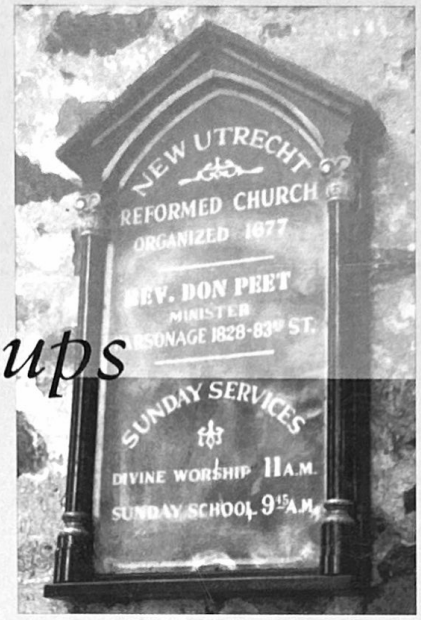
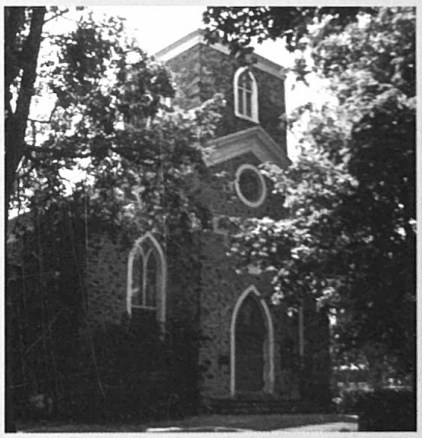
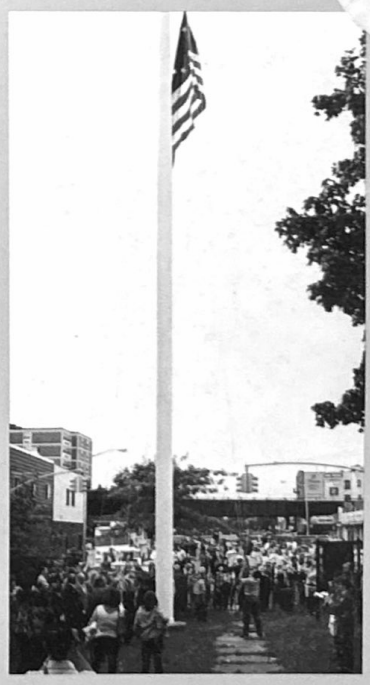
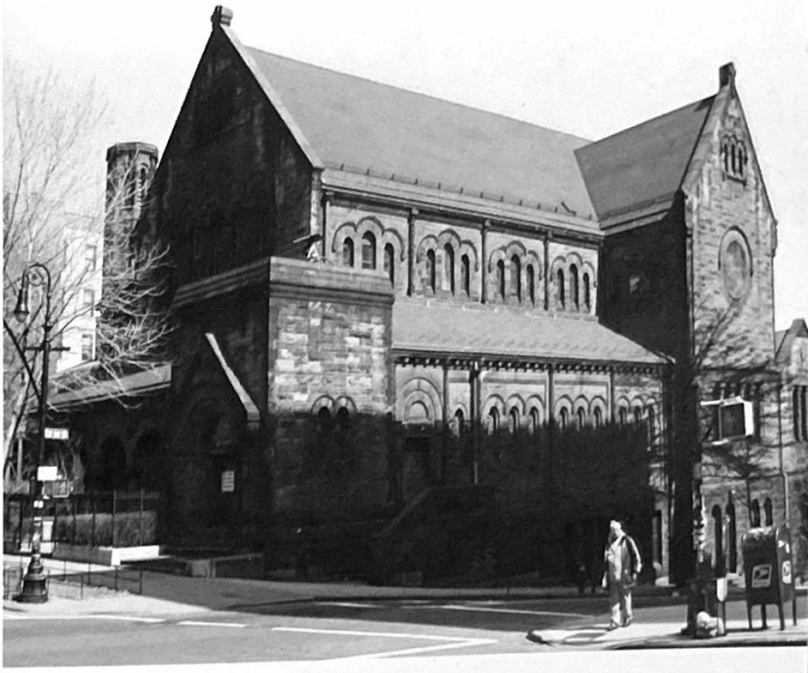


Friends Groups

- *Attic Maintenance*
- *Shared Use*
- *Cell Towers*







Only the pigeons knew how to get in and out of the massive attic at St. Luke's Episcopal Church in Harlem. During repairs to the roof drainage system, attic access became critical.

The Importance of Attics

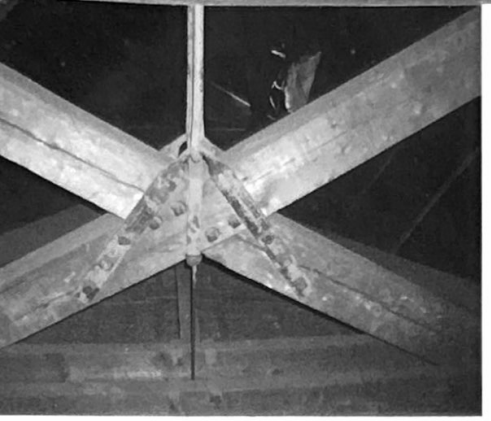
by Dan Allen and Ann-Isabel Friedman

Many 19th century religious properties feature sanctuary ceilings that seem to have no relation to their large, elaborate roofs. In the space between are the attics that house critical roof structure. They can also harbor dangerous pests and hold early evidence of leaking roofs. Proper ventilation and insulation of attic spaces can have a major impact on the energy consumption, temperature, humidity, and condition of interior spaces and finishes.

Routine, Thorough Inspections Are a Must

Attics can be hard to reach, and routine inspections of attic spaces are rarely included on an institution's schedule of routine maintenance. Often, a long-deferred attic inspection will uncover unanticipated structural problems. Community Synagogue is an 1848, Greek Revival building with a simple temple front and gable roof. Until 1904, the building was home to the German Lutheran Congregation whose members perished in the General Slocum disaster. The building remained vacant until 1940, when the synagogue purchased the building. No routine inspections were conducted of the peaked attic above the flat plaster ceiling of the sanctuary, and there was no evidence of roof leaks at the sanctuary interior. In 2003, a full conditions survey by architects Li/Saltzman revealed, upon inspection of the attic, the unanticipated structural failure of a major roof truss member, brought on by recent heavy snow loads.

Periodic inspections of the attic must be thorough, not superficial. At the First Presbyterian Church in Gilbertsville, a Romanesque Revival structure constructed in 1882-84, a 2001 conditions survey by architects Crawford & Stearns focused on the visible failure of the masonry tower at the exterior, which led to a $200,000 masonry restoration project. Due to budget constraints, the architects were not asked to survey the interior systems or structure. In 2002, a member of the congregation noticed that a portion of the decorative wooden ceiling at the very large sanctuary interior was sagging. The decorative bead board ceiling was suspended from the attic truss above, but movement in the structure was hidden from view by fiberglass insulation at the attic "floor." A section of insulation was removed, revealing the problem: the joists or ledger beams from which the board and bead wooden ceiling was suspended had slipped from their carrying beams, leaving portions of the ceiling unsupported. Even if the architects had been engaged to survey the interior initially, without the removal of several sections of insulation to probe the structural framing, they might not have detected the problem.



The attic, with its massive wood truss beams, lack safe walkways.

Air baffles that were blocked with debris were cleaned during the restoration.

Safe Access Is Critical

Before an attic can be inspected, safe access to the attic must be available. Attic access became an issue at St. Luke's Episcopal Church, the large Romanesque church designed by one of Manhattan's leading church architects, Robert H. Robertson, and constructed from 1892 to 1895. Located in the Hamilton Heights Historic District in upper Manhattan, the building is constructed of substantial brick and brownstone walls with heavy timber roof framing. The sanctuary features a huge plaster cruciform vault with a sharply peaked roof above. Conditions in the sanctuary indicated possible problems at the attic above. Paint from a relatively recent repainting of the interior was peeling away from the plaster ceiling in sheets, indicating roof leaks and poor attic ventilation. The congregation's leadership was consulted about the condition of the attic, but no one had ever been in the attic, and no one knew how to reach the main attic space!

The Upper Manhattan Historic Preservation Fund (UMHPF), a joint project of the New York Landmarks Conservancy and the Upper Manhattan Empowerment Zone Development Corporation (UMEZ), planned to fund needed roof and gutter repairs, but first needed to survey the attic. However, first, the route to the attic had to be determined.

At the rear of the church, an extremely shaky wooden ladder led to a trap door above the organ loft, which led to an intermediate attic space with a sloping, seamed sheet metal floor and no other apparent openings: a dead end? From the exterior, louvers at the gable ends of the roof, which should have provided attic ventilation, were visible. Roof hatches in the shingle roof were visible from the street, and one hatch had apparently lost its cover. Pigeons were flying in and out. Once scaffolding for the gutter work was in place, these hatches were accessible from the outside.

UMHPF project manager Jill Crawford, architect Dan Allen of Cutsogeorge, Tooman & Allen, and the contractor's foreman climbed up the steep roof from the perimeter pipe scaffolding and entered the open hatch, just like the pigeons. They found themselves in a large attic space above one end of the transept. By crawling through a low, jagged opening in the brick wall at the crossing, they were able to access the vast and very dark main attic. Aside from one piece of graffiti indicating that someone named Gus had been in the attic in the early 1940s, there was no sign that the space had been visited by anyone.

Much of the attic was without a walkway, and the team had to walk along the massive wood truss beams to reach the louvers at the end. But the louvers proved to be ingeniously constructed. An air baffle box at the interior prevented gusts of wind from blowing directly through while still allowing for ventilation. The sheet metal louvers were in good shape, but the air baffle arrangement had trapped a significant amount of leaves and general debris against the bird screen, effectively blocking the louvers and negating their ventilating function.

The restoration project included cleaning and repair of the baffles, as well as the replacement of deteriorated lower panels with new lead-coated copper louvers. The pigeon population was evicted, and the missing hatch cover was replaced. Wood timbers were in generally good condition, but the beam connections were reinforced. New lighting even helped the team locate the original interior access: a barely visible opening from the intermediate attic above the organ loft, which had appeared to be a dead end. By crawling through this opening, it is possible to get from the church interior to all of the attic spaces, although not easily. The congregation was advised to install a better access ladder, so that routine inspections of the attic will be possible in the future.

Dan Allen is a principal in Cutsogeorge, Tooman & Allen.

Five Steps to Better Attic Maintenance

1. Make sure that ladders and walkways are well maintained. Replace broken boards in walkways, and test and repair handrails regularly. Nothing discourages access to an attic for maintenance more than a shaky ladder or an unusable walkway. Well-maintained access ladders and catwalks encourage frequent inspection of the underside of the roof deck. Frequent inspection is valuable in detecting leaks early, so that they can be repaired easily without the damage spreading to the church finishes below.

2. Maintain lighting in the attic, if at all possible. Good light levels will allow for inspection of the underside of the roof deck. Lights should be strong enough to illuminate any low areas at the eaves, which are frequently the first areas to exhibit water problems because of their proximity to gutters and downspouts.

3. Clean ventilation louvers regularly (at least yearly). Louvers perform a vital function by preventing condensation, which can cause deterioration of wooden roof framing and decking, thereby helping to maintain ceiling paint and plaster finishes below. This is particularly true for slate and tile roofs, where the underside of the wood deck should be well ventilated.

4. Pigeons must be evicted and kept out. When the louvers are cleaned, maintenance personnel should check and repair bird screens to prevent access by pigeons and other birds or bats. Pigeon waste can become a serious health problem if allowed to accumulate in an attic or bell tower. Once pigeons are inside and nesting they will multiply rapidly, creating a huge mess.

5. Beware of overzealous volunteers with insulation. Be careful about the placement of insulation in attics. Do not allow the installation of insulation at the (usually sloped) underside of the roof deck. Do not allow insulation to cover vents or louvers. Insulation of the attic floor/sanctuary ceiling may be appropriate but needs to be evaluated carefully.