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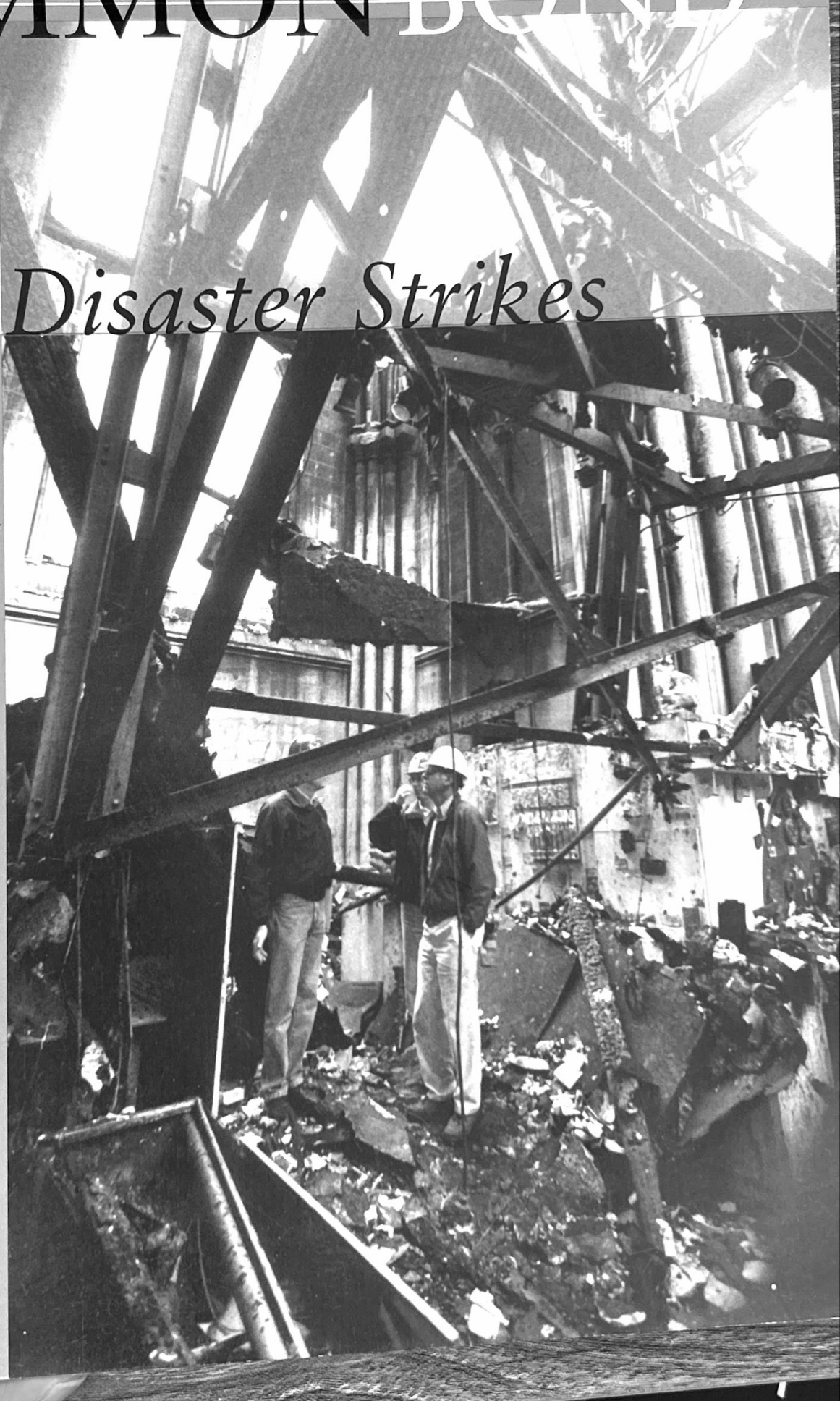
New York Landmarks Conservancy

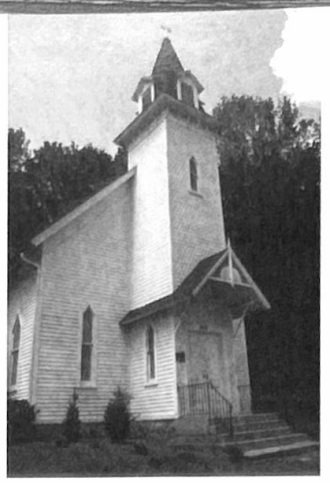
COMMON BOND

Volume 17, No. 3
Fall - Winter 2002

After Disaster Strikes

- *How to Save a Steeple: A Case Study*
- *Gothic Revival Construction Techniques*
- *Care and Maintenance of Wooden Exteriors*





Left: St. Joseph's Roman Catholic Church, Worcester, demonstrates the lasting appeal of the wooden house of worship.

Center: Another charming wood building - Tompkins Corners United Methodist Church, Putnam Valley.

Right: Beth Joseph Synagogue in Tupper Lake is unusual for its wooden siding.

Preserving Our Heritage:

Repainting Exterior Wood on Houses of Worship

by Patricia Nelson

The little, white clapboard church on the country lane is an American icon, emblematic of simpler times and a slower pace of life. While this idealized image may be hard to find, many congregations are proud to worship in wooden churches, synagogues, and meetinghouses. These treasured buildings, with their wooden bell towers or spires, ornamental cornices, and clapboard-sided walls, are found on city streets and suburban byways, in addition to winding rural roads.

Caring for these structures can be a special challenge, requiring vigilant maintenance of the exterior paint and the underlying wooden structure. Ongoing moisture penetration can lead to structural damage, or an improper paint application can cause paint failure. Even keeping to a regular routine of cleaning and touching up small areas of paint damage, congregations will need to repaint every seven to ten years.

Identifying Damage in Painted Wood

Paint protects the wood from moisture and temperature extremes, but years of weathering cause damage to surface and underlying paint layers. Every congregation should appoint a maintenance official to regularly check for signs of paint failure and identify the problem as mild, moderate, or severe.

Mild deterioration can be identified by:

- Mildew, which shows up on paint in damp, shady areas,
- Chalking, or powdering of the paint surface, happens when the resin in the paint film disintegrates, and
- Staining, or discoloration, from iron nails or other metals near the wood.

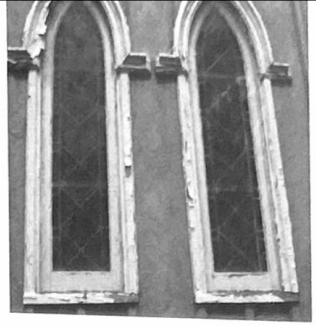
These problems normally do not require major paint removal, but they should be addressed promptly to prevent escalation. Moderate deterioration will warrant limited paint removal and can be identified by:

- Crazing, or the appearance of interconnected lines and hairline cracks, which is caused when earlier layers become brittle with age and the bond between paint layers breaks,
- Peeling, which arises from incompatibility between paint layers, such as an oil paint applied over a latex paint, or a paint layer applied over a dirty surface,
- Moisture blisters, which form when water enters the wood,
- Wrinkling, which appears when paint is applied too thickly, before the previous layer has dried, or in direct sunlight.

Severe surface conditions that necessitate total paint removal are paint peeling to bare wood and deep cracks in the paint surface, known as "alligatoring." Both conditions can be attributed to moisture collecting behind the paint layer. Water sources include ice melting from roofs, drains seeping into exterior walls, and humidity from bathrooms penetrating walls from inside. Broken or inadequately sized gutters and untrimmed bushes near outside walls also affect how moisture penetrates wood siding.

Preparing the Surface for Painting

Before any paint can be applied, the exterior surface must be cleaned of any dirt, debris, mold, and chalking, then dried, treated, and primed to allow new paint to adhere properly.



St. Peter's Episcopal Church, Bloomfield, (left) came to the Conservancy for assistance in restoring painted exterior, which exhibited peeling (center) and crazing (right).

"The whole job is in the preparation," says Edward Dunne, owner of A.P. Painting & Improvements, Inc., a contracting company in West Hempstead, New York.

The most common cleaning process in use by paint contractors today is power washing with a mild detergent. It is not appropriate for many situations, because it can abrade or penetrate the wood, particularly fragile shingles or molded trim. It is crucial to test a small section of the building before starting a pressurized wash and to restrict pressure to the minimum effective level, below 600 psi. Congregations should consult with their architect or conservator and make a decision based on their circumstances.

St. Peter's Episcopal Church in Bloomfield, New York (pictured above) features board-and-batten wood siding, with limited molding around the Gothic-style windows. The risks of were minimal, so the congregation opted successfully for a limited and controlled power washing.

In contrast, First Congregational Church in Saugerties, New York (shown on page 16) was concerned about moisture damage to its 1852 building. The elaborate frames of its bell and clock tower's arched and circular windows were seriously deteriorated, as was the molded trim at the roof overhangs and areas of the original stucco cladding. In the end, the congregation decided against any power washing and scraped the affected wood by hand.

In repainting the exterior of an historic building, it is generally neither necessary nor desirable to completely remove the prior paint layers, as long as the wood has been repainted and regularly maintained. One alternative to power washing is scraping the paint off with hand scrapers and putty knives, then hand sanding the resulting uneven surface.

Mechanical disc sanders are not recommended, as they tend to leave swirl marks in the wood, but limited use of orbital sanders may be acceptable for bigger jobs. Because local restrictions may apply to work that generates particulate pollution, the sander should be equipped with a vacuum-like attachment to collect the dust. Many historic buildings have previous paint layers containing lead, which needs to be carefully managed during the cleaning process. Dust from lead paint is hazardous to inhale, and face protection must be worn in the vicinity. Workers need to contain paint residue and properly dispose of any contaminated materials.

For intricate decorative areas, chemical strippers can be used in moderation. This process will require respirators and gloves, adequate ventilation, and scrupulous waste removal. The treated wood should be rinsed very carefully afterward and then left to dry.

The final steps of preparation are applying a water-repellant preservative, especially in extremely wet climate areas, and an oil-based primer coat. For best results, this should be completed within 48 hours after scraping.

Selecting the Correct Paint

Because paint layers need to be compatible for longest wear, it is a good idea to consult with paint manufacturers to select the correct paint.

Acrylic, or latex, paints are water-based and have better color retention and resistance to mildew. They allow the building materials to breathe and are the recommended paint choice unless an existing paint layer is oil-based. Most historic buildings were originally painted with oil-based paints, and the application of an acrylic layer without the proper alkyd primer can cause catastrophic peeling.

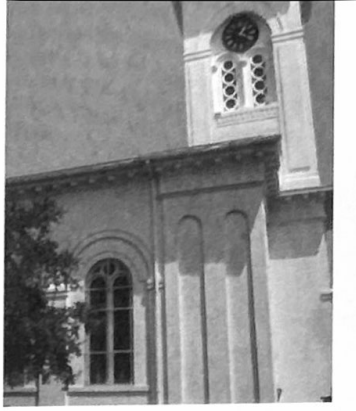
Oil paints are recommended for areas of hard usage like doors and window. An oil-based primer can be used under acrylic paint to increase adhesion.

Architect Walter Sedovic of Irvington, New York suggests selecting high-quality paint materials, "There may be a higher initial cost, but the savings will last over time."

Over the course of the years, as old paint is removed and new paint layers are applied, congregations may want to preserve a small section of full paint layering for conservation history. Under an eave or another inconspicuous location is a good choice. A building conservator can prepare a paint analysis, where all previous layers are reviewed, assessed, and dated. [For more information on historic paint analysis, please refer to *Common Bond*, Volume 17, no. 1.]

First Congregational Church

First Congregational Church



First Congregational Church, Saugerties, worked with contractors to find an affordable way to re-paint its stuccoed clocktower with arched and circular wooden trim (left). After cleaning and preparation, professionals in a boom truck handled the tower painting (center), and volunteers painted the church exterior. The repainted church (right) stands proud in its new coat.

Hiring Consultants and Contractors

Painting maintenance should be routine for a congregation, and the painting itself can often be handled by volunteers, particularly for areas of the building that do not required scaffolding or other special access. However, some congregations choose to hire professional painting contractors.

In that case, the maintenance official or building committee should put together a detailed scope of work, specifying paint type, acceptable manufacturers, surface preparation, and number of prime and finish coats. The next step is to solicit and compare estimates from several contractors. All bids should include project recommendations, business qualifications, references, and before-and-after pictures of previous restoration jobs. Congregations should evaluate estimates based on experience, reliability, and material costs. "If cost is a major concern, congregations should postpone the major paint job until they have raised the funds, but they can proceed with smaller repairs in the interim," according to Dunne.

For example, the First Congregational Church in Saugerties solicited four estimates, ranging from $18,000 to $75,000, then selected the contractor who agreed to oversee painting by volunteers. The congregation raised the needed $40,000 through a year-long fundraising drive, including support from the community and a grant from the New York Landmarks Conservancy.

One caveat: If paint applications are not lasting for the expected seven to 10 years, consult a professional. Paint deteriorating in only two to three years can be a sign of underlying problems. An architectural consultant or building conservator can diagnose the problem, such as structural problems or ongoing water infiltration, and offer solutions.

Managing a Painting Project

A paint job is a big project for any congregation, but it doesn't have to be overwhelming. Understanding the process is the first step towards effective management. The value of a qualified preservation architect and a reputable contractor cannot be underestimated. Both can make a daunting project run significantly more smoothly for a congregation. Well loved and well maintained, wood-sided houses of worship can be the crown jewels in our communities – urban or rural. A new paint job can make them sparkle and shine, like the gems they are.

Resources

Publications

Garskof, Josh, "Prior to Paint: Preparing Wood For a New Coat," *Old-House Journal*, July/August 1994.

Jordan, Steve, "The Short Course on Exterior Paint," *Old-House Journal*, March/April 1999.

O'Bright Alan, *The National Park Service's Preservation Tech Notes No. 2: Exterior Woodwork: Paint Removal from Wood Siding.* Available online at www2.cr.nps.gov/tps/briefs

Park, Sharon, *The National Park Service's Preservation Tech Notes No. 1: Exterior Woodwork: Proper Painting and Surface Preparation.* Available online at www2.cr.nps.gov/tps/briefs

Weeks, Kay D., and Look, David, *The National Park Service's Preservation Brief No. 10: Exterior Paint Problems on Historic Woodwork.* Available online at www2.cr.nps.gov/tps/briefs

Websites

Old House Journal, www.oldhousejournal.com, click the Preservation How-To link for detailed briefs.

This Old House, www.thisoldhouse.com

Sherwin Williams, www.sherwin-williams.com

Warren, www.warrenpaint.com