New York Landmarks Conservancy

25 years of preserving New York

Common Bond

The Late Gothic Revival

Also in this Issue:

- Profiles in Preservation
- Replacing Asphalt Shingle Roofs
- Interview with Fundraiser Peggy Powell Dean
- Good-bye to Guano
- Conditions Surveys as Essential Planning Tools
- Maintaining Cedar Shingles
- Resources
- Financial and Technical Assistance
- 1997 Sacred Sites Program Grant Awards

Volume 14, No. 1/June, 1998

Building Systems: Asphalt Shingle Roofs

by Kim Lovejoy

The most popular roofing material in America for its low cost and easy installation, asphalt shingles can last from 20 to 40 years. However, performance depends on careful selection of materials, detailing, and maintenance of the overall roofing system, including flashings.

Publications on historic building restoration rarely mention lowly asphalt shingles, focussing instead on more glamorous slate and tile. Nonetheless, asphalt shingles are the most widely used roofing material in America, accounting for 75 to 80 percent of new and replacement roofing, according to the Asphalt Roofing Manufacturers Association. Many religious properties with pitched roofs are covered with asphalt shingles. Regular inspections and repairs to keep them watertight is just as important as maintaining any other type of roofing system.

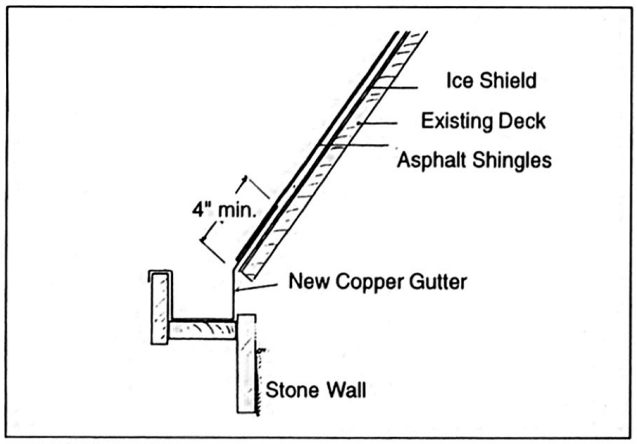
According to *Roofing Houses of Worship* (see **Resources**), asphalt shingles were produced as early as the 1880s and have been popular since the early years of the 20th century for their low cost, ease of installation, fire-resistance, and variety of colors and textures. Made from organic or fiberglass felts saturated with asphalt and covered with an aggregate mineral surface, most are made to last 20 to 30 years, with premium shingles now warranted for 30 to 40 years. The thicker and heavier the base layers of a shingle, the longer it will last.

Asphalt shingles were sometimes the original roofing material for new houses of worship and ancillary buildings. Detached houses for clergy commonly have asphalt shingle roofs. In other cases, less costly asphalt shingles were chosen to replace a historic slate, tile, shingle, or metal-clad roof that reached the end of its service life, changing the aesthetic qualities of the roof. Laminated asphalt shingles, developed since the late 1970s, offer greater choices in textural quality, shadow lines, shapes, and colors, to more closely resemble slate and wood shingles.

Inspecting Asphalt Shingle Roofs

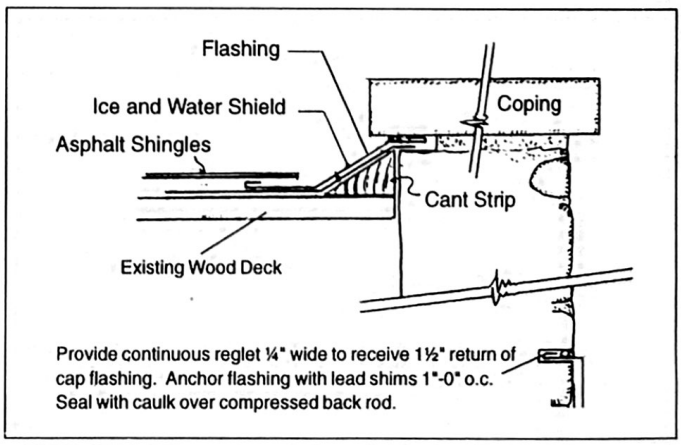
Weathering from rain and sunlight gradually causes granules to erode and edges to curl, indicating that the material is reaching the end of its service life. Do not wait until your building is damaged by leaks to plan for replacement of a worn-out roof. At least once a year in early spring, inspect the roof from the ground with binoculars. Look for overall erosion and cupping, especially at ridges, hips, and edges. Check downspouts for granules that have accumulated. Get a closer look by climbing a ladder or looking down from a steeple or dormer window, but avoid walking on shingles. Check for clogged gutters that may have caused water to back up into the eaves.

Asphalt shingles, especially those that are old, thin, or poorly attached, are susceptible to damage from winds. Assign someone to inspect the roof after storms. Damaged, torn, or loose shingles in isolated locations can be easily replaced or reattached. Black bituminous patching marks on shingles or flashings, or sections of



Harry Hansen, Kyserike Restorations Inc.

Construction detail for an asphalt shingle roof and copper gutter at the Chapel of the Holy Name, Cragsmoor, NY.

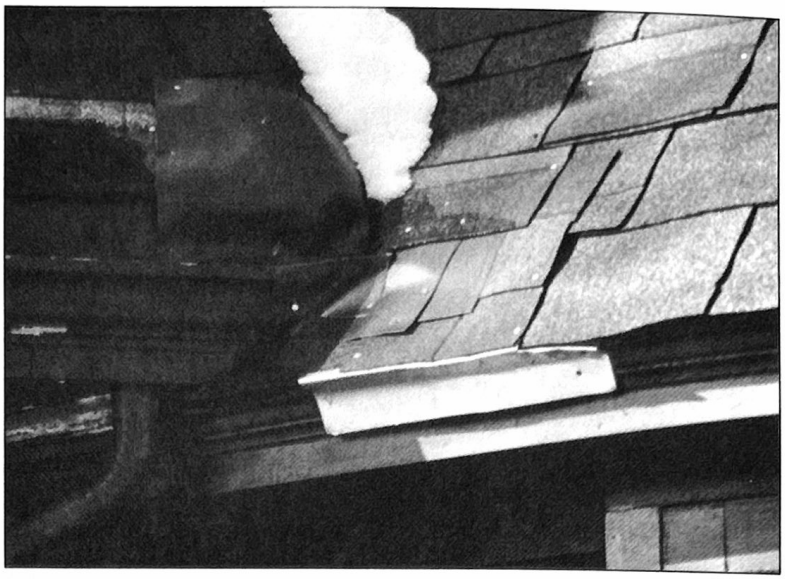


Construction detail for parapet flashing, ice and watershield, and cant strip on an asphalt shingle roof installation at the Chapel of the Holy Name, Cragsmoor, NY.

different colored shingles, indicate past repairs which could be trouble spots and should be monitored.

A thick, lumpy roof indicates too many layers of shingles. Many times a new layer of asphalt shingles is applied over layers of old shingles to save on the cost of removal; this is generally a poor practice. Asphalt shingles should lie flat over asphalt-saturated felt underlayment and wood decking, fastened securely with nails, cleats, and roofing cement.

Also inspect inside the attic for leakage, unevenness, or sagging. During the winter, notice whether snow melts over warm spots under the roof and freezes into ice — this can cause ice dams and structural damage.



Ken M. Lustbader

Stop-gap repairs to an asphalt shingle roof contribute to long-term damage and increase the cost of replacement. In this photograph, an important roof intersection and flashing detail has been patched and altered beyond its service life.

Inspecting and Replacing Flashings

Flashings protect joints from rainwater, and direct water towards eaves, gutters, and leaders. They should be inspected at least annually. Often leaks can be traced to flashing failures in an otherwise sound roof. Look for tears and cracks, buckling, corrosion, missing or deteriorated attachments, and failed sealants.

"If the valleys are flashed with mineral surfaced roll roofing, as often occurs, the valleys are apt to wear out before the rest of the roof," points out John Bero of Bero Associates Architects, Rochester, NY. "Look for missing granules (bald spots). Note also that as the roll roofing ages it shrinks, causing it to lift from the roof deck. A falling branch or even a careless roofer can then easily puncture the valley flashing."

Avoid spreading black roofing compound over flashing to stop leaks; it often fails and cracks within a year, corrodes metal, and interferes with proper repairs. Temporary patches in metal flashing can be made with fiberglass mesh embedded in either fibrated latex-based roof coating or fibrated asphalt, writes J. Randall Cotton in "Flashing Points: A Primer on Protecting Roof Junctures" (*Old-House Journal*, November-December 1995). Consult a qualified roofer about temporary patches or replacement of sections of deteriorated flashing.

"The best time to install flashing is during a complete roofing tear off and replacement," says Mr. Cotton. Galvanized steel flashings and chimney crickets are often specified for asphalt shingle roofs. According to John Bero, galvanized steel tends to last as long as premium shingles (30 to 40 years), resists tearing and punctures, and can be securely attached by soldering — far more durable than pop-riveting pieces and sealing edges with caulk, typical on aluminum flashing.

Open valleys with galvanized steel valley flashing (or less durable roll roofing) are preferred for individual interlocking type shingles, according to the *Residential Asphalt Roofing Manual* published by the Asphalt Roofing Manufacturers Association (see **Resources**). Woven or closed cut valleys, made by installing overlapping premium asphalt shingles over valley flashing of roll roofing, are preferred for strip shingles.

Lead-coated copper and terne-coated stainless steel, commonly specified for slate roofs, are premium flashing materials recommended for the longest life spans and lower maintenance. Sound flashings can sometimes be reused when cladding is replaced.

Maintaining Roof Cladding

Replacement of isolated, missing, or damaged shingles is an easy task that many "do-it-yourself" homeowners tackle. The procedure is to bend back the shingles located above those in need of replacement (this should be done gently to avoid cracking); remove remaining nails and scraps; nail a new shingle in place; and glue down the raised shingles with roofing cement. However, for a building owned by a religious institution, consult with your insurance agent before encouraging maintenance staff or volunteers to perform even the simplest roof repairs. Normally, for liability protection and to ensure proper site safety, materials, and workmanship, only properly insured, qualified roofing contractors should work on your roof. It is advantageous to have a relationship with a roofing contractor who can patch an asphalt shingle roof after storm damage, and attend to leaky flashings promptly.

Replacing Asphalt Shingle Roofs

Overall loss of granules and cupping of asphalt shingles indicate that the roof needs replacement. Typically, the labor and material costs for simply applying asphalt shingles are but a small percentage of the overall costs for a reroofing project. Here's an example of the multiple elements of a reroofing project, specified in bid documents prepared by Bero Associates Architects for the First Presbyterian Church in Albion, NY:

- Removal of old roofing and deteriorated gutters and flashing
- Partial decking replacement
- Asphalt shingle roofing system consisting of felt underlayment, ice and water shields, shingles, and drip edge (usually copper)
- New flashing: base and counter, and at all joints and penetrations
- Gutters, leaders, drains, and strainers
- Ventilation at ridges and soffits
- Masonry repairs to chimneys and coping

Roofing projects are estimated by the square, which equals 100 square feet. At the First Presbyterian Church, the line item for replacement of the 4,830 square foot Parish Hall Roof with asphalt shingles in 1997 was about $8,000 ($165/square), including a proportional share of the contractor's general conditions, overhead, profit, and contingency. But the total roofing budget increased to $41,300 ($855/square) when additional items were included: removal of old roofing and gutters, wood deck repair and plywood overlayment, ridge and soffit vents, a new copper gutter and downspout system, roof hatch, chimney crickets, and chimney repointing and flashing.

Asphalt shingle roof installations can benefit from professional assistance, especially in specifying materials and detailing tricky junctions often found on historic houses of worship. Preservation architects are very familiar with roofing projects of all kinds on historic houses of worship, and can prepare a well-thought-out scope of work for estimating the costs of different materials and obtaining comparable bids, as in John Bero's work for the First Presbyterian Church of Albion. In another example, the Friends of the Stone Church in Cragsmoor, NY called on preservation consultant Harry Hansen of Kyserike Restorations Inc., High Falls, NY to survey the asphalt shingle roof of the Chapel of the Holy Name (1897), and prepare drawings and specifications. Both projects were assisted by grants from the Sacred Sites Program.

If your building has a simple gabled roof without complicated joints or a history of leaks that require investigation, a building committee with some expertise in roofing may choose to work directly with a good roofing contractor. Look at the quality of the contractor's recent work and make sure the installation adheres to the standards in the National Roofing Contractors Association *Steep Roofing Manual* (see **Resources**).

Choosing Between Slate and Asphalt Shingles

Every year, many congregations across New York State face anguished decisions about whether to replace aged, leaking slate roofs in kind or with less expensive asphalt shingles. And occasionally, owners of a building which lost a slate roof in a previous alteration may wish to restore the roof closer to its historic appearance.

Preservation architect John Bero, who has planned many roof replacement projects for historic religious properties, says that "in a cost-benefit analysis, the two materials come out about the same. You may pay three times as much for a slate roof that will last three times as long as an asphalt shingle roof. But the balance tips towards slate when you consider that a longer-lasting slate roof maximizes the time between failures and preserves historic appearance. Every time there is a roof failure, water penetration damage adds costs. In good economic times, many congregations choose to put their money into slate roof systems."

Since slate roof installations use the most durable flashing materials (lead-coated copper and terne-coated stainless steel), the most skilled contractors, and specification of details and construction supervision by experienced preservation architects or conservators, quality and durability are built in. To compare total costs of reroofing in asphalt shingles or slate on your building, it's best to have a survey and estimates prepared by an architect who has the expertise to specify durable materials and details for each type of system.

Certain brands of laminated asphalt shingles build up five or more shaped layers at random to simulate the textures and shadows of slate. Many new products that resemble slate have become available in the last decade. Compare samples with natural slate from a distance. In all cases, however, it is advisable to seek recommendations from local preservation organizations and the Sacred Sites Program. And before signing a contract, make sure to check with your local preservation commission to obtain any necessary approvals.