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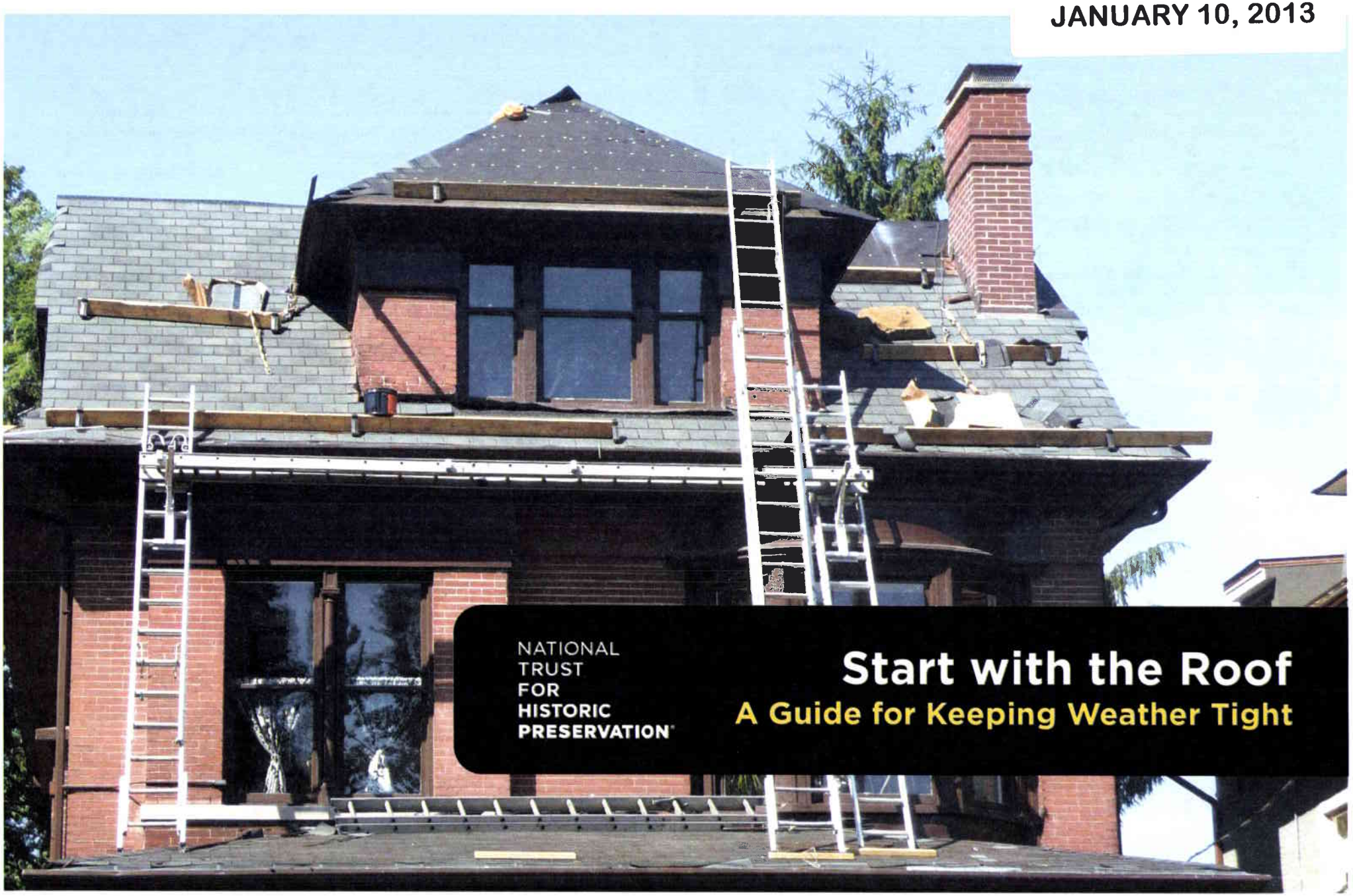

NATIONAL TRUST FOR HISTORIC PRESERVATION®

Start with the Roof

A Guide for Keeping Weather Tight

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A Guide for Keeping Weather Tight

The roof of your older and historic building is ground zero for providing a weather-tight defense against the elements, and central in any strategy for weatherization and increasing energy efficiency. The roof type and materials affect your building's heating and cooling abilities. And with an estimated 30 percent of heat loss occurring through the walls, ceiling and floors, it makes good sense for building owners to focus on their roofing and ensure it is doing the best possible job. Once roofing is let go, even for a season or two, damage and deterioration can set in. The longer it is neglected, the more expensive it will likely be to repair. Older and historic buildings are inherently designed to address heat loss and cooling. But they can always be made more energy efficient and perform using new technology, such as through solar access. Whole house weatherization may start with the roof but should not end there. Assess all parts, from windows and mechanical systems to insulation and air leaks. This resource, divided into the following sections, is intended to help you look at your building's roof and its parts, and think about all options.

Is My Roof Energy Efficient?

How Do I Know if My Roof is Failing?

What Type of Roof Form is On My Building?

When Replacing My Roof, Do Materials Matter?

- Asphalt, Flat, Metal, Slate, Tile, and Wood

Case Studies:

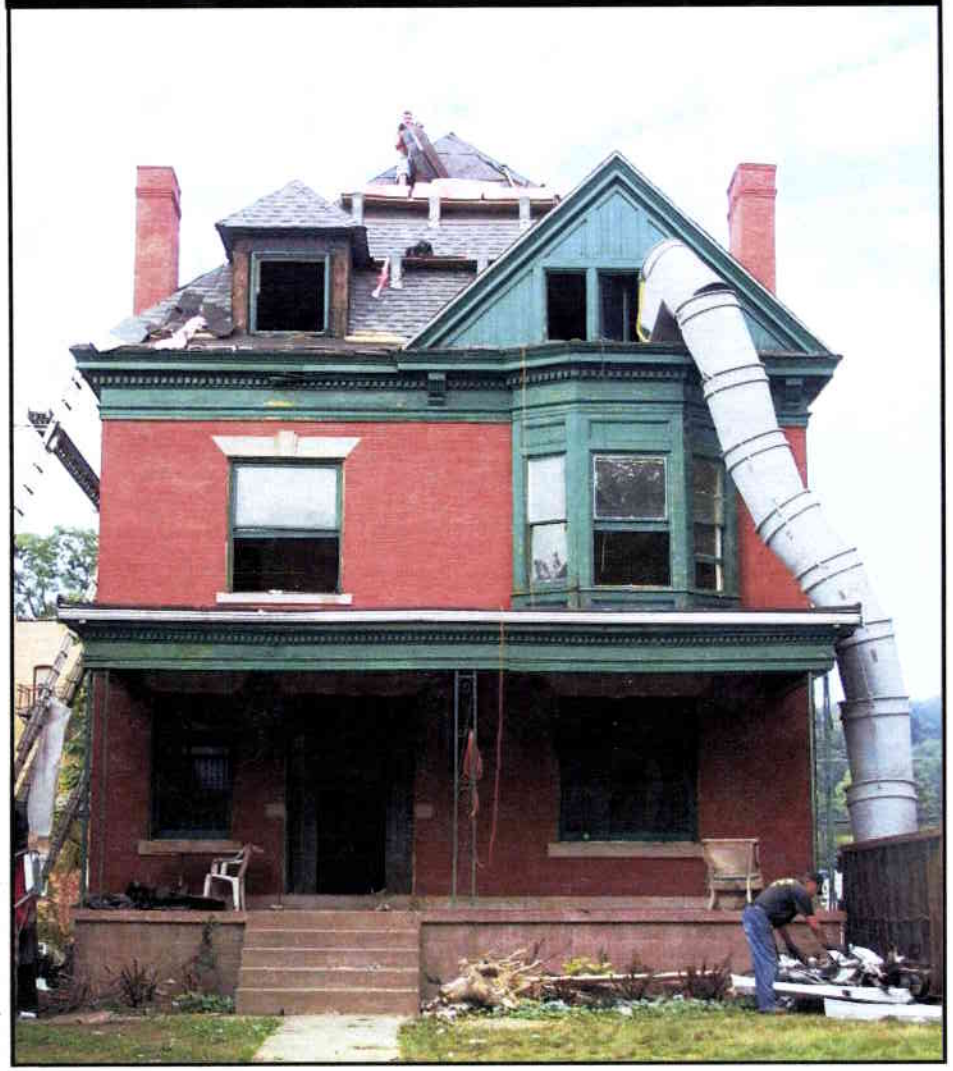
- Altering the Roof Line
- Anatomy of a Roof
- Early Intervention is Key
- Keep the Porch
- Letting the Light In
- Tapping Solar Power

For more information...

Go to **www.PreservationNation.org/Weatherization** to find additional resources on roofing and much more for your older and historic building.

Start with the Roof

American Foursquare house undergoing rehabilitation
Pittsburgh, Pennsylvania



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Start with The Roof

Is My Roof Energy Efficient?

Your roof is only one part of the energy efficiency equation, though often a major source for heat loss through the attic and other locations. Diagnosing whether or not your roof is performing well, in terms of energy efficiency, can be done through a whole house energy audit as well as simple, easy-to-do tests.

For owners of older and historic buildings in colder climates, try the melt test. Is snow melting more quickly on your roof in comparison to nearby buildings? Different patterns of snow melt and the formation of icicles and ice dams may be indications of large air leaks, lack of attic venting, and inadequate insulation. HVAC ductwork, often located in the attic of an older home, is another source allowing for heat loss. When ducts leak, which is often, this allow large amounts of valuable heat into the attic.

Diagnosing the problem with your roof and keeping a tight 'lid' on your building is only the first step. What follows should be a strategy to address water and moisture infiltration, sealing air leaks and ductwork, and the appropriate installation of insulation where needed.

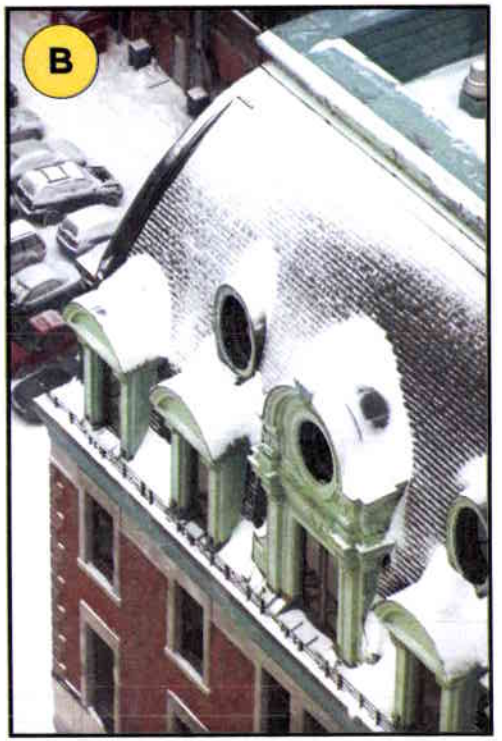
A — A bungalow with uniform buildup of snow may indicate good insulation and an overall weather tight roof.

B — A Second Empire building with combination of mansard and flat roofs, as well as dormers, creates lots of areas for potential air leaks.

C — As snow melts more quickly on a roof in comparison to others, it may indicate a source for large amounts of heat loss.

D — Weatherization can help tighten up a building for greater energy efficiency and comfort so occupants do not have to resort to make-shift ways for sealing up air leaks.

E — Most older buildings, even modernist houses like this one from Phoenix, AZ, were designed with energy efficiency in mind. Wide overhangs provide shade and protect the interior from heat gain.



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Start with the Roof

How Do I Know if My Roof is Failing?

All roofing materials deteriorate and eventually will fail over time, depending on the quality of the material, appropriate installation, routine inspection, and ongoing maintenance. Roofs are subject to natural forces like rain, snow, sun degradation, wind and pollutants. Roofs are also commonly damaged by falling tree limbs, small animals, foot-traffic and insect infestation. In general, when roofing has failed, replace using in-kind materials where possible and only consider substitute materials when technically or economically not feasible.

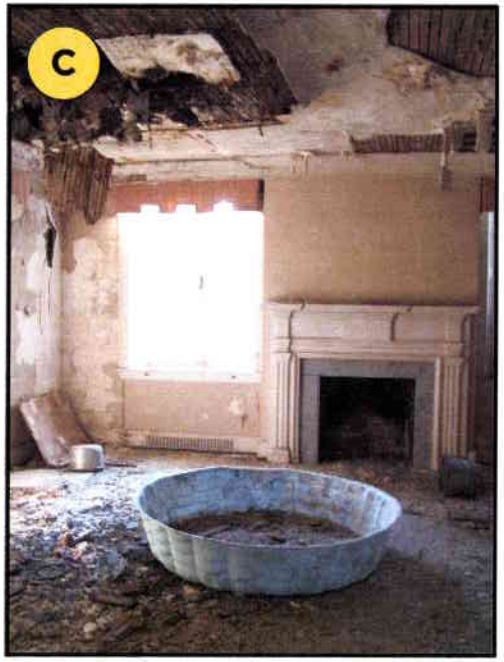
A Detail near dormer showing asphalt fiberglass roof shingles that are completely failing — delaminated, curled, worn, frayed — and likely allowing water to enter the building. Typically, asphalt shingles last between 15 to 25 years before needing replacement.

B Asphalt shingles that are puckered like this may indicate problems with the underlying sheathing deck or felt movement often caused by varying moisture levels in the material under the shingles. Possible strategies include improving attic ventilation to eliminate excess humidity and refastening the distorted shingles.

C By the time your roof failure has reached this point — collecting water in buckets and, in this case, a children's swimming pool — damage is readily apparent with saturated ceilings, loose plaster and lath, and holes. Fixing the roof and drying out the house is still an option, as well as repairing damaged ceilings. If let go long-term, serious structural issues will form.

D Slate roof shingles are a strong and durable material that typically last between 60 to 125 years. During the winter, slate may be damaged by ice or ice dams and daily freeze-thaw cycles. Before slates themselves fail, roof fasteners and nails might corrode or loosen which requires regular inspection.

E A properly ventilated and insulated roof should have no signs of ice damming or icicles. Heat loss melts snow which then travels to gutters, cools off and forms ice. Locate sources of air leaks, insulate and seal to prevent roof damage.



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What Type of Roof Form is on My Building?

Older and historic buildings have a variety of roof types, starting with the overall shape. As you maintain your building, and consider ways to weatherize, think about the architectural character too.

A GABLE. The most common roof shape is found on all types of buildings, in this case, a 1910s Craftsman Bungalow in Phoenix, AZ, with front-facing paired gables. Roof is formed by two sloping planes rising from side walls and meeting at central ridge line. Typical features include overhanging eaves, sometimes with exposed rafter tails or wood bargeboards.

B GAMBREL. Instead of having a single ridge at the peak, gambrel roofs have three ridges, one at the peak and two along sloping sides. This roof type is often found on Dutch Colonial Revival or sometimes Queen Anne houses, such as this example in Manchester, New Hampshire.

C THATCH. Curved edges, artificial sags and undulating shingles are often devices to simulate Storybook architecture design.

D HIPPED. Formed by four sloping roof planes extending from the walls to a ridge, usually with overhanging eaves.

E CROSS GABLE. Usually found on T, L or cross-shaped buildings, formed by the intersection of two gables, typically at the center of the roof.

F FLAT. Rarely entirely flat and usually gradually sloped to drain water away, sometimes featuring a low wall or parapet along the edges.

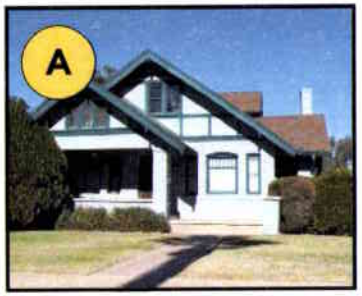
G JERKINHEAD. A ridged roof with gable ends with the ends 'sliced off' to give the appearance of a fold, turndown and truncated gable.

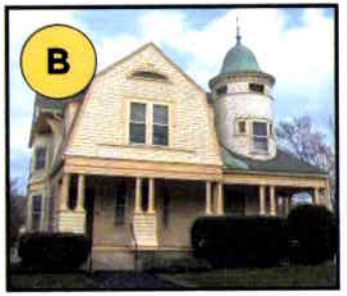
H MANSARD. Steeply sloping planes extending from a flat roof, often found on Second Empire architecture.

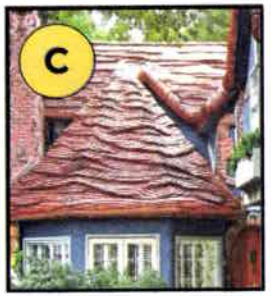
I GOOGIE, MODERNIST. Exaggerated, experimental roof forms and soaring shapes found on Mid-Century buildings, breaking all the rules, such as this building in Asbury Park, NJ.

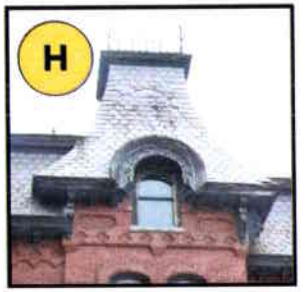
J SAWTOOTH. Composed of series of parallel roofs in succession, resembling a saw. Often found on industrial buildings providing optimal daylighting.

Start with the Roof









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