

INDEPENDENCE HALL RESTORATION:

mix of old world craftsmanship +
modern building science

PRODUCTS FEATURED: Cedar Breather Roofing Underlayment



Introduction

The restoration of the tower of Independence Hall in Philadelphia was a fascinating example of the National Park Service's fierce dedication to preserving the building's structural elements while supplementing and strengthening the historic site with modern building materials.

Under the direction of general contractor Daniel J. Keating Company, United States (US) Roofing Company headquartered in Norristown, PA, the 14-month, \$4.9 million project was completed in early 2012. The more than 140-ft.-tall tower, which comprises the weather vane assembly, cupola dome and base, belfry, spire steeple, and clock stage. Starting at the top and working down level by level, the roofing company's workers have meticulously applied their craft to help restore the structure.



Extending the Life of a Roof

US Roofing began work on Level 9 in early 2011 at the top of the spire steeple and cupola dome. Deteriorated roofing boards were found when the cedar shakes of the cupola were removed. Each decayed board was replaced with a new board that matched the existing boards in dimension and size. Before new western red cedar shakes were put into place after the repair work was completed, workers installed a moisture management product not yet invented when the last renovation took place in the '80s: Cedar Breather®, a ventilating roof underlayment designed specifically for wood shingles and shakes.

Pennsylvania manufacturer Benjamin Obdyke introduced the first-of-its-kind Cedar Breather to the building and construction industry in 1990 as a way to provide a space between the solid roof deck and wood shakes and shingles that would cover it. The intention is to promote continuous air flow between the two layers to help preserve the life of the roofing. The three-dimensional open mesh creates a space to help eliminate excess moisture and allows the underside of the shingles to dry, preventing thermal cupping and warping and reducing potential rotting.

The Independence Hall architect Bargmann Hendrie + Archetype Inc. of Boston specified that a "ventilation mesh" product like Cedar Breather be integrated into the roofing assembly. US Roofing's Daggett chose Cedar Breather from the three approved product choices given by the architect. "We have used Cedar Breather on many other projects and decided it was the best fit for this project," Daggett said. "Another thing that influenced our decision was the fact that Benjamin Obdyke is a U.S. company based just outside Philadelphia in Horsham, PA."

In addition, procurement of the 2,000 square feet of old growth custom cedar shakes was made possible through the coordination of Bradco, Capital Forest Products, Annapolis, MD, and the Waldun Group, BC, Canada. One of the challenges for Waldun was to locate harvestable old growth cedar trees in the United States that contained the number of tree rings-per-inch needed to provide



CRAFTSMEN, PRODUCTS CONTRIBUTE TO INDEPENDENCE HALL RESTORATION

General Contractor

Daniel J. Keating Co., Narberth, PA

Architect

Bargmann Hendrie + Archetype Inc., Boston, MA

Roofing Contractor

United States Roofing Co., Norristown, PA

Metal Subcontractor

Metal Alliance, Huntington Valley, PA

Copper Roofing Manufacturer

Hussey Copper, Leetsdale, PA

Nail Manufacturer

Maze Nails, Peru, IL

Roofing Supplier

Bradco Supply Co., Malvern, PA

Wood Products Distributor

Capital Forest Products, Annapolis, MD

Cedar Shake Manufacturer

Waldun Group, Maple Ridge, BC, Canada

Cedar Breather Manufacturer

Benjamin Obdyke, Horsham, PA

Fastener Distributor

Pro-Fast, Essington, PA

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desired density. "Older growth trees were preferred because they produce wood that is denser and will therefore last longer," Daggett explained. While the 18-inch and 24-inch shakes used at various locations on the tower were split at Waldun's mill, an old-world craftsman from Washington State personally hand split the 36 x ¾-inch shakes that are used most commonly used on the historic structure. In total, cedar shakes are installed on four of the nine Independence Hall levels.

The basic configuration of the restored roof is a wood substrate base; a self-adhering waterproofing membrane (Grace Ice & Water Shield); Cedar Breather; and cedar shakes with a felt interlay. Associated 20-ounce lead coated copper flashings were used throughout. "It's a great example of combining old-world craftsmanship with modern building products that today's building science finds to be based on the latest knowledge in the field," Daggett said.

In addition to the cedar shake portions of the roofing, US Roofing's scope of work was much broader. It included removing, replacing, or repairing the lead roofing above the main entrance of the tower, as well as removing and replacing all 20-ounce lead coated copper flat seam roofing and associated flashings on four levels, including the lantern dome. In addition, the firm removed, replaced, or repaired all copper ornamental flashing work, including the urns and the wreath beneath the tower clock on Level 5.

According to the National Park Service, the purpose of the important project funded by the American Recovery and Reinvestment Act is to arrest and correct decay of the tower. Independence Hall itself was built in 1732, with the addition of the tower taking place in 1828. The last restoration of the tower took place in the 1980s. Besides the roofing work on the huge project, other elements of the project include repointing and replacing damaged brick masonry and restoring and painting window sashes, frames, and doors.



This rehabilitation will help preserve Independence Hall for many more generations to come and will allow the National Park Service to assure visitor enjoyment for the millions of visitors to Independence National Historical Park each year.

Cynthia MacLeod,
Superintendent

About Benjamin Obdyke

Since 1868, Benjamin Obdyke has been a leading designer and provider of moisture management solutions. Our founder, Benjamin P. Obdyke, pioneered the first-generation corrugated downspout. This innovation ultimately led to the modern day Benjamin Obdyke. Benjamin Obdyke's pioneering spirit remains the hallmark of our company today.

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