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THE PECULIARITIES OF HISTORIC SLATE ROOFS

With Examples of Wrongful Condemnations

Slate roofs have two unusual characteristics that set them apart from most other roofs: 1) a common slate roof will last a long time, even centuries; and 2) slate roofs are made of removable and interchangeable parts — any individual slate shingle, for example, can be removed from the roof and replaced, as can any flashings on the roof. However, these characteristics can be both a blessing and a curse.

It's easy to understand the *advantages* of a simple, natural roofing system that can last centuries, but there is also a disadvantage to a slate roof's longevity. A century is a very long time, and over a period of 100 years, a lot of people can get on the roof and do a lot of damage, euphemistically described as "repair." Repair work by poorly qualified roofing contractors, building owners, maintenance personnel, and others with good intentions but lacking the necessary skills and knowledge, is a common blight on historic slate roofs. When a roof consultant inspects historic slate roofs, he or she will invariably witness a plethora of chronic slate repair mistakes. In fact, some historic slate roofs have been so poorly maintained and even abused by contractors that they are condemned by inspectors and deemed beyond hope.

However, this is where the second characteristic of slate roofs comes into play. No matter how poorly repaired and maintained a slate roof is, *if the slate is still good*, the roof can be restored. The bad repairs can be removed, the tar patches erased, the mis-matching slates replaced, and the roof returned to its former glory — *if* the slate is still good.

It is incumbent upon any professional roof consultant who claims an expertise in slate roofing to be familiar with all the types of slate and the characteristics of each, including the expected longevity. Roof slate, stated simply, is stone. It is quarried up and down the eastern seaboard of the United States as well as around the world, yielding many different types, colors and characteristics.

Figure 1: A recent photo of a barn in Vermont testifies to the potential longevity of a standard slate roof.
Photo by Stephen J Taran Jr.

Roofing slate can last roughly 55 years to maybe 400 years, depending on the type, thickness, method of attachment, slope, and other factors. If an historic roof is 100 years old and has slate on it that is historically proven to last only 100 years, then the roof is reaching the end of its life, cannot be restored and should be replaced — with new slate. On the other hand, if a roof is 75 years old and has slate on it that is historically proven to last 150 years, then it is only halfway through its life and is a prime candidate for restoration. After 100 years, if the stone is sound, why should the entire roof be replaced? Any leaks can be repaired, any flashings replaced, and faulty repair work redone while leaving the original stone in place, providing it is still sound.

An historic slate roof halfway through its life is a very common scenario in the United States today. Virtually all of these good roofs will nevertheless be condemned by contractors and consultants who have little or no experience in slate restoration. At present, contractors with a vested interest in roof replacement significantly contribute to the destruction of many good slate roofs.

The following are some examples of slate roofs that illustrate these, and other peculiarities.

Ford's Theater, Washington DC — Almost Condemned

If a roof leaks, it must need to be replaced, right? Ford's Theater is the historic site in Washington D.C. where President Lincoln was assassinated in 1865, shortly after the theater opened (Figure 2). In 1998, the slate roof leaked in two places. Standing in the upstairs hallway near a front window, one could see plaster crumbling from the ceiling, indicating a major leak. There was a vantage point outside where one could stand on an adjoining building and get a close-up look at the slate roof on the theater. The slates looked very old; perhaps they were the originals from 1865. Apparently, it was time for a new roof. However, just to play it safe, the author was called in to inspect the roof prior to putting the project up for bid. That was a smart move.

In short, the entire roof and all of the copper flashings had already been replaced and were about 25 years old — quite young for a Buckingham slate roof, which can be expected to last at least 125 years. However, when the original slates were removed, the good ones were saved and recycled back onto one side, coincidentally at the only place where the roof could be easily inspected. It appeared from that vantage point as if the entire roof was still the original slate, but a closer inspection showed that 80% was new slate and only about 20% was original. Furthermore, no current worker at the theater had been there for 25 years and there was no written record of the roof having been replaced, so no one knew that it was already new. The leaks? The front parapet wall copper coping had split at a soldered seam and was channeling water directly into the building down the front wall. The other leak was caused by a defective flashing between the adjoining flat roof and the building wall. The roof itself didn't leak at all. From a slate perspective, it was still a new roof — but almost condemned.

Figure 2: Ford's Theater
Left photo: This side of the roof looked old because the original 1865 slates were reused here when the roof was replaced around 1975. The right photo shows the front parapet wall. The arrow is pointing to the spot where the copper coping had split — right at the joint — a perfect funnel for rain water.

Photo at left by Joseph Jenkins. Photo at right courtesy of National Park Service.

Figure 3: Castle Park

Left photo: This is only the entranceway to the huge building which has large wings emanating in three directions. The slate, at 120 years of age, is in excellent condition. Roofing contractors, however, would love to tear it off. Right photo: The minimal wind damage does not justify replacing the entire roof when the slate is still in good shape. Photos by Joseph Jenkins

Castle Park Apartment Complex — Wrongfully Condemned

The Castle Park building near St. Louis is a huge, sprawling, five-story building with an 850 square slate roof built in 1882 (Figure 3). The roof suffered hail and wind damage in the early 2000s and was subsequently condemned by contractors who offered to replace the roof with asphalt shingles for ten million dollars. The entire roof was original, flashings and all, and some leaking was occurring.

An inspection by the author revealed that the slates were a Buckingham or Peach Bottom variety of exceptional quality. There was essentially no wear visible on the slates after 120 years. The very steep slopes and the semi-dry conditions of the area had helped preserve the copper, most of which was original. The wind and hail damage on the roof was quite limited and all of it was repairable for less than 3% of the replacement cost. The slates themselves could be expected to last another century, although the copper flashings would have to be replaced eventually. The main leak was in a copper valley and was unrelated to the storm damage. Although this beautiful slate could last at least another century, contractors were earnestly attempting to permanently destroy it.

Historic Home - Wrongfully Condemned

A residence in an upscale Chicago neighborhood suffered hail damage to its unique “battered butt” style 75-year-old slate roof (Figure 4). Three firms looked at the roof and all three condemned it before the owner contacted the author for an impartial inspection. Hail damage to the mixed Vermont and Buckingham slate was certainly evident, but it was limited and all readily repairable by any contractor with a minimum of slate roof restoration experience. The inspection revealed about 150 slates needing to be replaced — a couple days work for experienced professionals.

The condemning roofing contractors were evidently influenced by the idea that insurance money would pay for an entire new roof. That may have been a much easier approach for them than trying to duplicate a slate roof that is a work of art. But the owner didn’t want a new roof — he liked the one he had. Yet, if he hadn’t put his foot down and hired the services of a knowledgeable roof consultant, he would have lost both his roof and the character of his house.

Venango County Courthouse — Wrongfully Condemned

In 2004, the author was called to consult on the replacement of a Pennsylvania courthouse roof (Figure 5). The 130-square Vermont “sea green” slate roof was approximately 72 years old. A county engineer insisted that the roof was beyond repair and was “absolutely certain” it had to be completely replaced. The author’s

Figure 4: Chicago area home with beautiful 75 year old “ragged butt” slate roof condemned by three roofing contractors (above left). Hail damage as seen on Chicago area “ragged butt” slate roof (above right) is repairable by simply removing the damaged slates and replacing them. Most of the slates are undamaged. Photos by Joseph Jenkins

inspection revealed that most of the problems with the roof were related to bad repairs in the past, all reversible. The slate itself was still good and could be expected to last at least another 50 years if not 75 or more. Replacement costs of $358,451 were reduced to restoration costs of $35,000, which included replacement of virtually all flashings with stainless steel — a savings to the cash-strapped county of over $300,000. See photos, next page.

Smithsonian Institute Building — The Castle

The huge Smithsonian building known as “The Castle” in Washington D.C. has a slate roof measuring several hundred squares in area (Figure 6). In 2000, the roof leaked in several places, generating talk of replacement — a very expensive proposition. An inspection by the author revealed that the roof had recently been replaced — a scenario similar to Ford’s Theater. The slate roof on the Castle was only about 25 years old, having already been replaced with new Buckingham slates (although some of the original slates had been reused). The majority of the flashings had also been replaced with new copper.

Apparently, some of the more important historical buildings in our nation’s capital had been refurbished around the time of the bicentennial in 1976. At about that time, Ford’s Theater got a new roof and so did the Castle. For some unknown reason, however, not all of the Castle’s flashings had been replaced. Four main central valleys and the flashings along two parapet walls had been left as original, and they now leaked. Furthermore, the maintenance crew had the habit of tromping on the slate roof in what appeared to be combat boots, crunching the slates underfoot, breaking them, and adding to the roof problems. The solutions were simple and relatively inexpensive: replace the old flashings with new copper and keep people off the roof who don’t belong there.

Cathedral in Arkansas — Rightfully Condemned
(But Replaced with New Slate)

Figure 5: Venango County Courthouse
This courthouse roof was unnecessarily condemned and scheduled for replacement. The Vermont “sea green” slate roof is only 72 years old — about halfway through its life. Comprehensive restoration work on this roof will only cost about 10% of the cost for total replacement because the slates and fasteners are still in good condition. Most of the flashings, however, need to be replaced. Photo by Joseph Jenkins

Figure 5A: Most of the problems associated with the courthouse roof were caused by bad repair work over the years, an example of which is shown above. The wrong type and color of slates were used to repair this roof, indicating the repair contractor didn’t understand proper restoration techniques. These will all need to be removed and replaced with slates that match the original roof. The author counted approximately 700 slates like this on the courthouse roof. Photo by Joseph Jenkins

Figure 6: The Smithsonian Institution Building known as the Castle had already been replaced with new slate, but some of the original flashings had been left in place, and they leaked. The author is inspecting the roof in the photo above. Photographer unknown.

A slate roof will wear out, of course, and at the end of its life, nothing can save it. This was the case with the Cathedral of St. Andrew in Arkansas (Figure 7). The Cathedral roof was made up of Pennsylvania black slates and Vermont unfading green slates mixed in an ornate pattern. At 120 years of age, the PA black slate had simply worn out — become soft, flaky and falling apart, especially on the south exposure and on the main body of the church. The Vermont unfading green slates showed almost no wear at all despite their age of 120 years.

The original roof was inspected by the author to determine its condition and to draw up specifications for replacement. The new slate roof was subsequently installed by Midland Engineering of South Bend, Indiana, to match the original roof. This time, however, Vermont unfading green slates were mixed with Welsh black slates from Cwt-y-Bugail. All of the copper flashings were replaced with terne coated stainless steel (some 4-lb. sheet lead was also used). The new slate roof is expected to last at least 150 years.

Private Residence - Wrongfully Condemned

For what it's worth, even newer slate roofs fall prey to unscrupulous roofing contractors. A house just outside New York City had a ten-year-old Vermont mixed slate roof (Figure 8). In the spring of the year the owner found some slates on the ground, along with some snow guards. A local "third generation slate roofing expert" was called to the scene. He promptly condemned the 100 square roof and offered to replace it for $450,000. The owner then called the author for a second opinion. The author's inspection revealed that the snow guards had let loose due to severe weather that winter combined with an inadequate number of snow guards for the size and slope of the roof. Each snow guard was hooked onto a slating nail causing a slate to be pulled out with

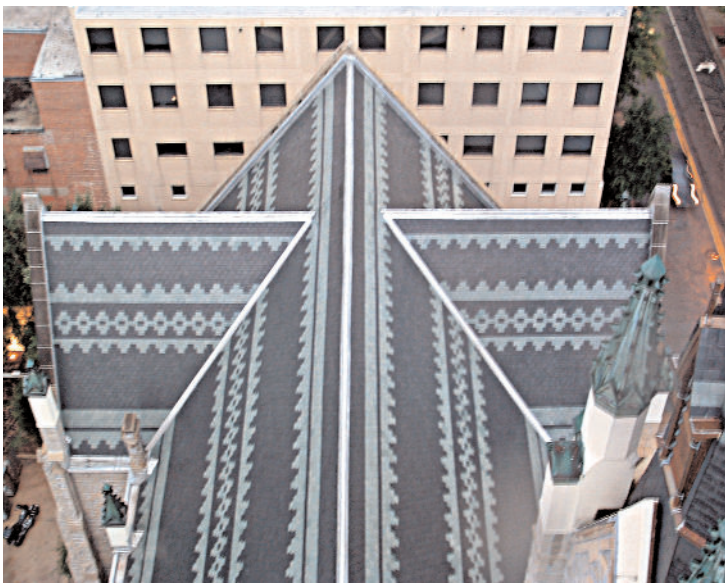

Figure 7: The Cathedral of St. Andrew in Little Rock, Arkansas, had worn out its black Pennsylvania slate after 120 years (above left). The Cathedral's new roof, installed by Midland Engineering in 2003, is likely to last 150 years. Vermont unfading green slate mixed with Welsh black slate and terne-coated stainless steel flashings should out-perform the original roof. Left photo by Joseph Jenkins; right photo by Lyle Bandurski.

Figure 8: Ten year old slate roof on a private residence condemned by roofing contractors. The nominal snow guard damage, however, was covered by homeowner's insurance — the roof did not need to be replaced at all.

Photo by Joseph Jenkins

the snow guard. The damages amounted to a maximum of $10,000 and all of it was covered by homeowner's insurance. Otherwise, the roof was fine. So much for "experts."

Remember one simple rule regarding the restoration of slates roofs: if the slate is still good, the roof can usually be repaired and/or restored. One can visually inspect the slate to determine its condition. If the surface is smooth, the slate is probably still good. If the surface is crumbly and flaky and if there are slates sliding off the roof here and there, you may be looking at a roof that is ready to retire. It certainly helps to be able to identify the type of slate that is on the roof.

In summary, slate roofs are in a world of their own. They require specific knowledge and expertise. Genuine experts in the field are rare and there are many "pretenders" whose advice should be taken with a grain of salt. A second opinion can be very valuable if it's coming from the right source.

Author Bio:

Joseph Jenkins is the author of three books, including the multiple award-winning *Slate Roof Bible*. He writes for, edits and publishes the *Traditional Roofing Magazine* (traditionalroofing.com), and has written about slate roofs for *Traditional Building Magazine*, *Period Homes Magazine*, and the *Interface Journal*. Jenkins has been featured on Home and Garden TV and has personally worked on over a thousand slate roofs while maintaining a slate and tile roof restoration business in northwestern Pennsylvania. Jenkins is on the Board of Directors of the National Slate Association and provides slate roof consulting services nationwide. A presenter on the topic of slate roof restoration at the past seven International Preservation Trades Workshops, he has also conducted slate roofing presentations for the Natural Building Colloquium, the National Slate Association, the Restoration and Renovation Trade Show, the Roof Consultants' Institute, the Spanish slate industry, and other venues. His website at jenkinsslate.com provides information on slate and tile roof repair, slate roof installation, roofing contractors, industry contacts, tools, techniques, and public messages about slate, tile and asbestos roofing.