

# Masonry Construction: Then and Now

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Masonry Magazine

Masonry Construction: Then and Now

By [Rhonda Maas](#)

[Masonry construction](#) technology has advanced so much over recent decades, that today's techniques and materials would appear almost magical to a time-traveling mason from 100 years ago. By the same token, when contractors "travel" back in time to restore a building from that era, we confront techniques that may be very different from today's practices.

Working with an old building requires an understanding of construction technology *at the time it was built*. After all, the building has survived until now, because it was properly constructed for its time. Modern advances have brought many improvements, but trying to apply these new techniques to an old building often results in failure. So, a contractor charged with restoring a masonry building needs to understand the differences between construction then and now, to avoid applying modern "fixes" that make things worse. Here are a few examples.

Masonry buildings built 100 years ago commonly were constructed with multi-wythe, load-bearing walls, unlike modern, curtain-wall construction based on a structural steel frame. Instead of an air space between the exterior masonry and the interior finish wall, a hundred-year-old building could have interlocking brick, stone or even rubble. The inside and outside walls are inextricably tied together. Understanding how these walls bear loads, flex with thermal movement and transmit moisture is critical to successful restoration.

For example, trying to shore up an old masonry building by tying it to a steel structure is likely to hasten its demise by making it too rigid. Old masonry walls need to be able to flex with vibration or thermal expansion and contraction, or else they will crack.

Another important difference between new and old construction is insulating capacity. Modern insulation is available with very high R-values, so new buildings can be made practically airtight to minimize the expense of heating and cooling. In contrast, thick masonry walls have a low R-value, but high heat-retention capacity. They even out variations in daily temperatures, so masonry buildings don't need as much insulation as modern, light-weight buildings. Super-insulating a historic masonry building actually can cause damage, because it keeps the outside wall colder and wetter, increasing the chance of freeze-thaw damage.

Moisture transmission is another significant difference between old and new construction. Old bricks and stone actually absorb moisture, but they also allow vapor to transpire. In effect, the building breathes. Introducing a moisture barrier, like a waterproof coating, actually can trap moisture in the masonry, accelerating deterioration.

Even though masonry buildings breathe, they can't withstand a steady onslaught of liquid water or ice. The biggest threat to old buildings is water damage. Here is where modern advances bring benefits to historic preservation. Adding flashings at parapets or windowsills to direct water away from the masonry will prevent water damage. And a sheet metal cap is one modern (and inexpensive) way to protect the integrity of parapets, cornices and brick rowlocks that keep water off the masonry face.

Note that interior flashings commonly used in modern curtain walls cannot be used in multi-wythe construction.

Proper drainage also is critical. Keep in mind that gutters and downspouts often were much larger 100 years ago than modern standard sizes. An incorrectly sized downspout will not carry the amount of water intended in the original design. It may be necessary to fabricate custom spouts and gutters.

Foundations spotlight another difference between historic and modern buildings. Sandstone, brick or rubble-fill foundations absorb more water than modern concrete, and, because they are below grade, they can't dry out the way masonry above grade does. It is vitally important to keep water away as much as possible by proper grading, landscaping and drainage. No downspout should empty next to a foundation. If a vapor barrier is desired, it should be applied to the outside of the foundation, leaving the inside open to allow moisture vapor to transpire out of the masonry.

In summary, construction techniques continue to evolve and improve. We wouldn't build a new building today the same way we built 100 years ago. But we should be equally cautious about applying modern techniques to preserving an old building. Replicating the original construction is the best way to ensure a successful historic renovation.

*Rhonda Maas is the co-founder and president of Building Restoration Specialties Inc. (BRS), which specializes in masonry restoration, preservation and conservation of historic buildings. Founded in 1986, BRS has a bonding capacity of about \$7 million, and is positioned to handle projects ranging from \$2,000 to over \$2 million. Learn more at [www.brsrestores.com](http://www.brsrestores.com).*