

# It's Not Just Stone & Brick

What you need to know about historic masonry.



*Kansas Statehouse Historic Construction  
Date Unknown*

Whether it's cleaning and repairing a limestone facade, matching a weathered brick veneer or replacing a terra cotta roof parapet, restoring masonry on a historically significant building is a complicated craft. "It's not just rocks and bricks," says **Julia Manglitz, AIA**, project architect with Treanor Architects Historic Preservation studio. "There are many things to consider, from the fabrication of the stone to installation to construction administration."

With the right planning, team, and approach, your historic masonry can be restored to its original grandeur. Here's what you need to consider:

## Building documentation

Understanding the building is about more than matching materials—though that's important. Your architect will identify styles of tooling or carving, tools used for each, its condition and repair history, considerations related to the era of construction and more. In addition to researching building history, your architect should photograph intact, original stone, to include in all documentation shared with fabricators and masons. Firms that specialize in preservation will often have a library of materials and construction methods resources to help them to make informed assumptions, even when a building owner lacks extensive documentation. Not doing thorough assessment upfront can impact the aesthetic quality of the building, its historic legacy and potentially the cost of your project.

## The skill of your craftsmen

With the vast changes in construction over the last century, it can be a challenge to find professionals trained to execute repairs, says **Scott Evett**, vice president at Mark 1 Restoration Company (Dolton, IL), whose firm replaced more than 6,000 limestone units, some weighing 2,500 pounds, during restoration of the Kansas State House. Of the 200+ masons interviewed to work on the project, just 3 made the cut. "These are true craftsmen," says Evett. "In new construction, it's about how many units you can lay in one after the other. With restoration, they need to understand epoxies, patching mortars, specialty pins, stains, chisels, hammer grinders, carving, tooling, and how to shore up existing construction while they're working on it. And when you're doing partial repairs on thousands of stones on a tight schedule—it's a

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***— Julia Manglitz, AIA***

challenge that requires a craftsman to be technically and physically at the top of his class.”

### **The importance of dry runs**

Preservation specialists often conduct extensive mock-ups before getting to work on the actual building. Depending on the complexity, there may be mock-ups of nearly every part of the masonry process: demolition, finish carving, tooling, and installation using pins, holes, adhesive and clamps. “We ask for samples of tooling and mock ups of repairs to work through with fabricators and masons,” says Manglitz. “We may look at the depth of tooling, the density and other areas to see how it works. Then, we’ll do a demo and install.” Conducting these “dry runs” ensures that everyone is on the same page about design intent and what technical adjustments may need to be made to achieve a result that looks great and is structurally and historically intact.

### **What’s needed to achieve results**

There is an art and science to working with historic stone and brick. Choices made during fabrication, demolition and installation can all greatly impact the quality, aesthetics and longevity of a repair. Installing and matching carved elements overhanging a building is challenging, but partial stone repairs require even more skill. Commonly called “Dutchman,” these repairs often involve large, heavy pieces of stone and just 1/16 of an inch can be the difference between a tight fit and one that does not blend. Fabrication methods also come into play. For example, modern mechanical tooling may not always replicate styles traditionally achieved with a hand chisel and mallet, though they are frequently utilized in fabrication.

### **Structural impact of repairs**

Having a structural engineer on your team is a must in masonry restoration. As a building owner, your focus might be staining, cracking or other aesthetic issues. But cleaning often involves water, and if mortar joints have deteriorated, that water will cause problems. The worst staining often happens around windows and roofs, where intricate arches and other structural elements are located. Even beautiful finish carving or tooling can be part of the wall structure. As soon as you cut, you impact the structure, and on aging buildings, masonry repair can become a negotiation between being architecturally durable and not degrading the structure, says Manglitz.



### **Vance Kelley Appointed Chair of National Trust Advisors**

In September, Treanor’s very own Vance Kelley was announced as the next Chair of the National Trust Advisors.

Vance was appointed to the position by the National Trust for Historic Preservation’s The Trusteeship & Governance Committee. He assumes his new responsibilities January 2014 and will serve a two-year term. In addition to the typical Advisor responsibilities of advocating the National Trust’s policy priorities and providing historic preservation expertise, Vance will serve as the National Trust Advisors’ representative on the National Trust Board of Trustees.

## Your scope could change

Drawing up construction documents requires educated guesses and assumptions—especially if your building documentation is limited. An experienced team will have an alternate plan ready to execute if they encounter unexpected deterioration or a change in the method of construction. “If we see bulging, we know something is going on there, but we don’t know what it is until we go in and assess it,” says Evett. “It might be water infiltration. It could be that the brick behind it is deteriorating. It could be the structural steel behind it is having problems. It could even be wood framing. Owners need to be flexible and put contingencies into their budget to handle what comes up.”

## Staging and access

There is a lot of creativity involved in getting heavy materials and the

people working on them to the right places at the right times, and managing the workforce and schedule accordingly. That might mean erecting hoists and scaffolds, adding protection for people on sidewalks below, using noncorrosive detergents for cleaning the building, or bringing in cranes in a way that doesn’t impede traffic, says **Emil Konrath**, president of general contractor The Konrath Group (Kansas City, MO). Weather adds to the challenges, says Evett. “We’re dealing with epoxies, mortars, lime putties, stains and specialty pinning— sometimes all at the same time. There are a variety of materials to be proficient in, and each has weather restrictions.”

## Your A/Es should be on site

Achieving a successful restoration may take an extra investment from your architect and/or engineer. While the

added construction administration can be a budget challenge, it creates a strong team relationship where contractors, masons and architects ask questions and talk freely about ways to achieve the best possible results for the client. Cooperation is required for access to repair sites, for efficient scheduling, for mock-ups—and another set of trained eyes on the scaffold can help catch any unexpected problems.

“As A/Es, we are trained in aesthetics, weathering, durability and structural concerns,” says Manglitz. “Having us on site during construction is an insurance policy that assures clients get the best quality possible. It can also be a cost saver, though sometimes the price of cutting that corner won’t be seen for 5-10 years when repairs start to deteriorate or crack.”



Municipal Auditorium c1936

## Smooth Operations:

### Keeping things running during construction.

For the majority of masonry restoration projects, it’s not feasible to shut down operations while contractors go to work. But it doesn’t have to be a logistical nightmare, says Emil Konrath, president of The Konrath Group (Kansas City, MO). Here’s how construction and operations can seamlessly co-exist:

**Understand the logistics:** If you’re having exterior work done, it may mean scaffolding and loud noise over your entrance. It may mean water and detergent flowing down the sides of the building during cleaning.

**Schedule around operations:** Develop a plan with your team about what access everyone needs and when they need it. Include all building use, after-hours use and parking or traffic concerns. Know how to keep working when use changes. Nothing ever goes according to plan in construction, but it’s possible to maintain the schedule without negative impact on operations. For example, while completing exterior repairs to Kansas City’s Municipal Auditorium, crews relocated to a top-level parapet when trucks were unloading for shows.

**Work clean:** Construction sites can be noisy, dirty environments. But when people are coming into the building on a regular basis, your construction team needs to make adjustments.

**It may cost more:** Owners need to consider the cost of mitigating operational impact. For example, if all exterior brick is being replaced, that building may need to be buttoned up regularly for public use. “Every job and every client has different needs,” says Konrath. “It’s about making the ongoing operational requirements work and communicating to the client about job access—and being sure everyone is agreed on the approach.”