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More on page 46.

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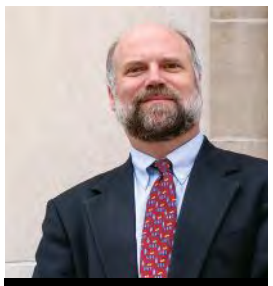
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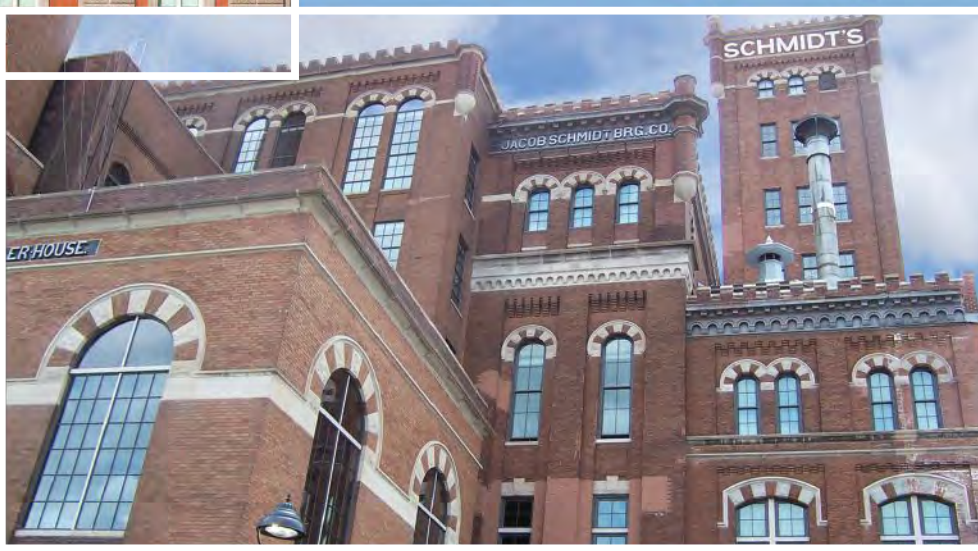

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INTERVIEWED BY ERICA FIRPO

Reinvesting in History

Architect Jean Carroon says a healthy world values and uses what already exists—including buildings.

JEAN CARROON

BEFORE

NEW CABELL HALL
University of Virginia
The newly transparent stair and adjacent study rooms overlook and connect with the new garden.

AFTER

All photos by Chris Payne unless otherwise noted; Jean Carroon photo by Goody Clancy

"I reuse buildings," comments architect Jean Carroon when asked what it means to be sustainability-focused in the 21st century. "Why focus on the smallest objects? Let's focus on our biggest objects, and reuse those." With sustainability a hot topic, Carroon pushes the conversation beyond heritage to one of equity and stewardship by emphasizing the need to take a second look at existing buildings—from landmarks like Trinity Church in the City of Boston (National Historic Landmark), an ongoing, large-scale renovation and restoration project spearheaded by Carroon and the Boston-based firm Goody Clancy, to less recognized structures like a local theater or residential building.

"We still have systems and attitudes that are quick to demolish and build something new, but it's really all about existing buildings and we have to use what we have more effectively," says Carroon while stressing that renewal must be extremely careful and never rushed. "Sometimes it's hard to figure out what to do with the buildings, but if you hang around them long enough, they sort of sort themselves out." Carroon's projects focus on the reinvestment in history, structure, and relevance, while combining sustainability with restoration. For her, buildings are more than just structures, they are "art—building communities and lifting spirits."

Carroon is a fellow of both the American Institute of Architects and the LEED program of the U.S. Green Building Council. She has served as a peer reviewer in the Design Excellence Program of the General Services Administration since 2008.

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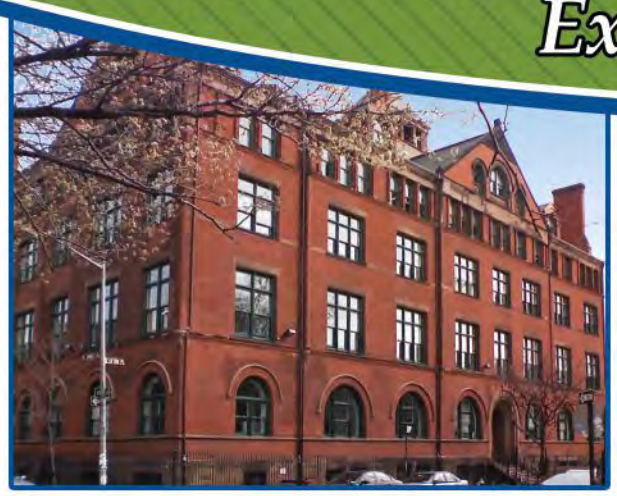

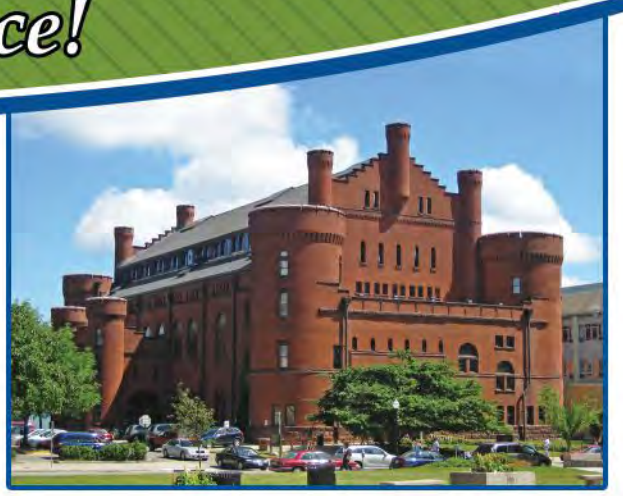

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PERRY HALL LOBBY
Champlain College
Durable, easily cleaned materials and extensive strategic daylight and views were central to the design.

1 ***Many people look at heritage preservation/restoration as something that is preserving the past, but for you preservation/restoration takes into account the future. What do you mean by that?***
I believe we have a responsibility to prepare existing and heritage buildings for the future—examples are preparations for climate change, like flood protection, or increasing the size of downspouts to handle more rain, or moving building systems to all electrical, anticipating a greening grid.

2 ***You literally wrote the book on sustainable preservation,*** **Sustainable Preservation: Greening Existing Buildings.** ***In your words, what is "Greening existing buildings"?*** "Greening" is a term that many use to define making a building or object more environmentally responsible, but it is also about making existing buildings (and the world) healthier places to work and live. We really have to live differently on the planet not just in the micro but also in the macro.

3 ***How can ways of thinking be implemented to become part of our natural way of thinking about urban planning?***
I think it is a very exciting time. The dire data of what we are doing to the planet and to ourselves (through toxicity of our energy sources, materials, and waste) seems to be gaining traction. The "sustainability" conversation is expanding, as it should, to be about health and well-being, tying into conversations about urban living, which is where the largest percentage of population will be going forward. Take a look at the *Reurbanism Atlas* (National Trust for Historic Preservation), which uses overlays of data to understand economic activity in relation to building age and building energy use. Our ability to analyze how we live is going to be increasing exponentially. We can measure what green roofs and green alleys can do for heat island effect. We can measure health impacts of transportation choices. We recently modeled the sun patterns and heat gain on an existing building and it allowed us to make smarter choices about windows, understanding that not all windows on the building had the same performance requirements. It's very exciting. We're also seeing an upsurge in analysis of environmental impacts from consumption and waste including building construction. I am very optimistic that this will inevitably lead to placing more value on existing buildings because a healthy world values and uses what already exists.

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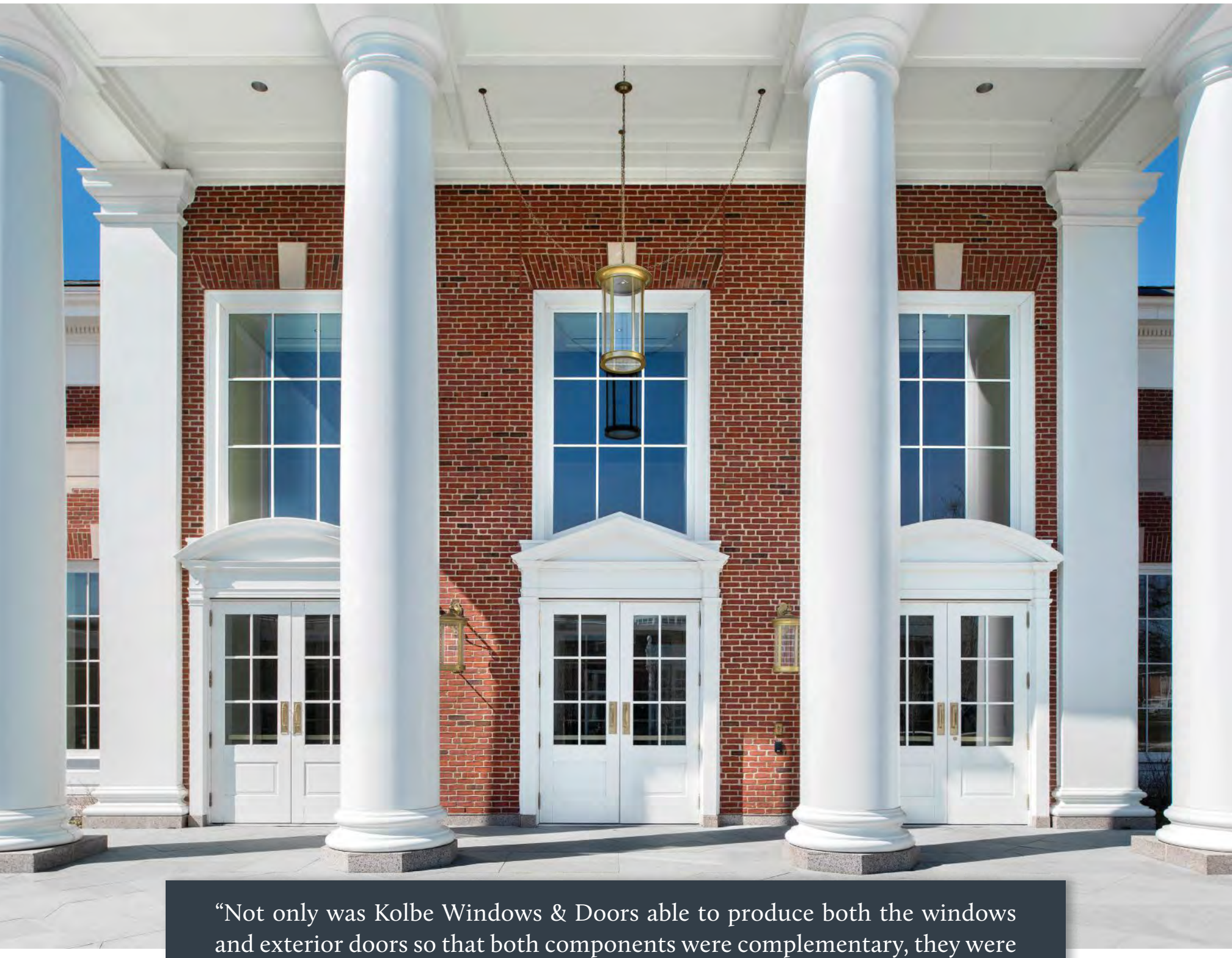

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PERRY HALL HISTORIC FRONT
Champlain College
Durable, easily cleaned materials and The 1860's house is carefully flanked by the new addition to support the historic residential character of the neighborhood.

4 ***You mentioned that when you work on a project you have a master plan for the building for near future and long-term future? Can you give some examples?***
Actually, this is not always true. It depends on the owner. Trinity Church in the City of Boston has always done this; it is an example of true stewardship. After each phase of work for the church, they have asked us to create a master plan that looks into the future—roughly 30-40 years, but with the long game in mind. They are very aware that they are stewarding a building that we hope will welcome and inspire people for centuries to come.

5 ***How can [the circumstances of] Notre Dame set an example for the future?***
The example should be one of thoughtful, careful research and decision-making. Most heritage architects I know are very concerned by the goal of completion in five years. There is a long path of evaluation and consideration of options, including material selections and building systems.

PERRY HALL REAR ADDITIONS
Champlain College
The two new wings flank the historic house and have views to Lake Champlain and a constructed wetland.

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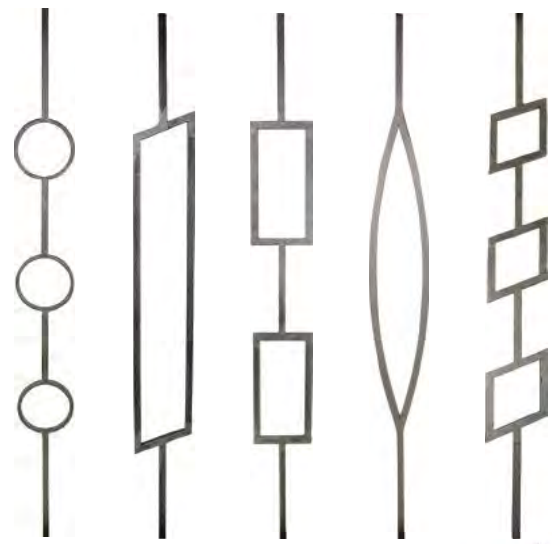

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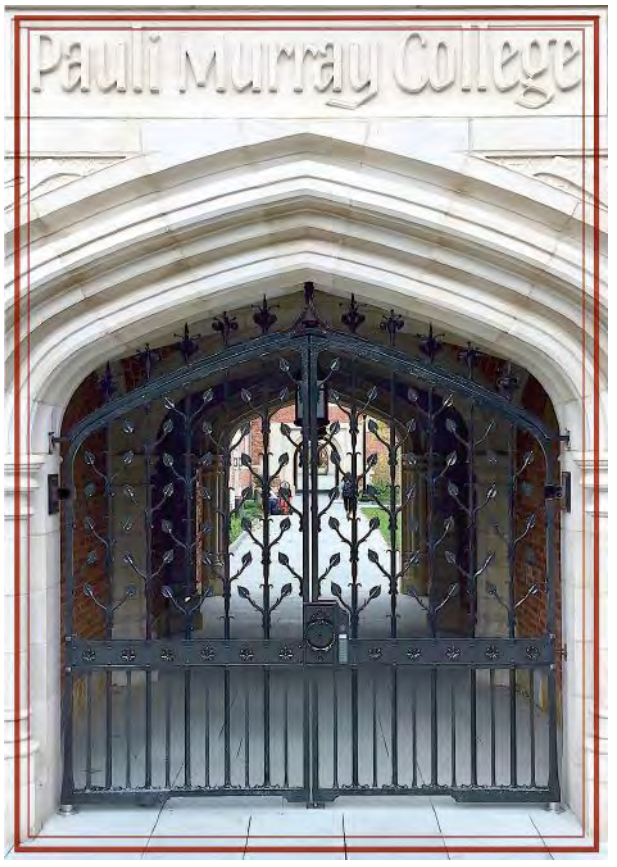
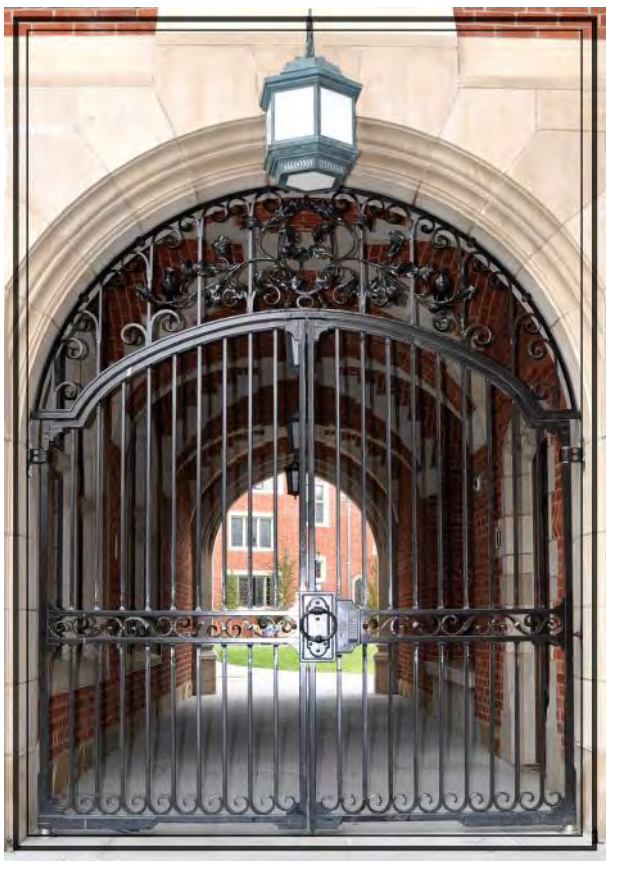
BY GORDON H. BOCK

Artistry in Iron

New college gates are worth Yellin about.





LEFT The four primary pedestrian gates at Pauli Murray and Benjamin Franklin Residential Colleges.

The entrance gates for the two new colleges at Yale University are striking examples of the traditional metalworkers' art, with ornamental design—historic and new—plus 21st-century functionality all wrought together.

As Zoltan Kovacs of Covax Design in Clifton, New Jersey, recalls, the gates' prehistory dates back years before any actual forging. "While I was working for a French company, Les Metalliers Champenois, I was involved as a consultant to Robert A.M. Stern Architects (RAMSA), the architects of the new Pauli Murray and Benjamin Franklin colleges. We studied the existing gates at Yale, looking very closely at the materials and the style applied to each gate." Based on these studies and sketches, Kovacs' company fine-tuned the design supplied by the architects, as well as devised automation (openers, etc.), proposed locking systems, and other access equipment for all the gates.

The gates and the colleges themselves were put on hold until after 2013 when the drawings went public for bidding. "Many, many talented artists and blacksmiths from the US and I believe Europe bid on the project. But you know, even if you have a detailed architectural drawing, the same metalwork can be priced from $10,000 to $100,000, depending upon how you execute the work." Ultimately, Covax was awarded the commission for the design and fabrication of the four largest and most ornate gates—including the entrances to Pauli Murray and Benjamin Franklin colleges—as well as the design of five smaller gates on less prominent facades executed by another company.

Kovacs, who is a metallurgical engineer by training, speculates that the added value his company brought to the work may have clinched the project. "Basically, these gates were fabricated by three Hungarians—Szabolcs Nemeth, Gabor Szombathy, and myself—who are all Eastern European-trained artist/blacksmiths, and from a school of knowledge very similar to Samuel Yellin's." The work of Samuel Yellin, the legendary early 20th-century master blacksmith and

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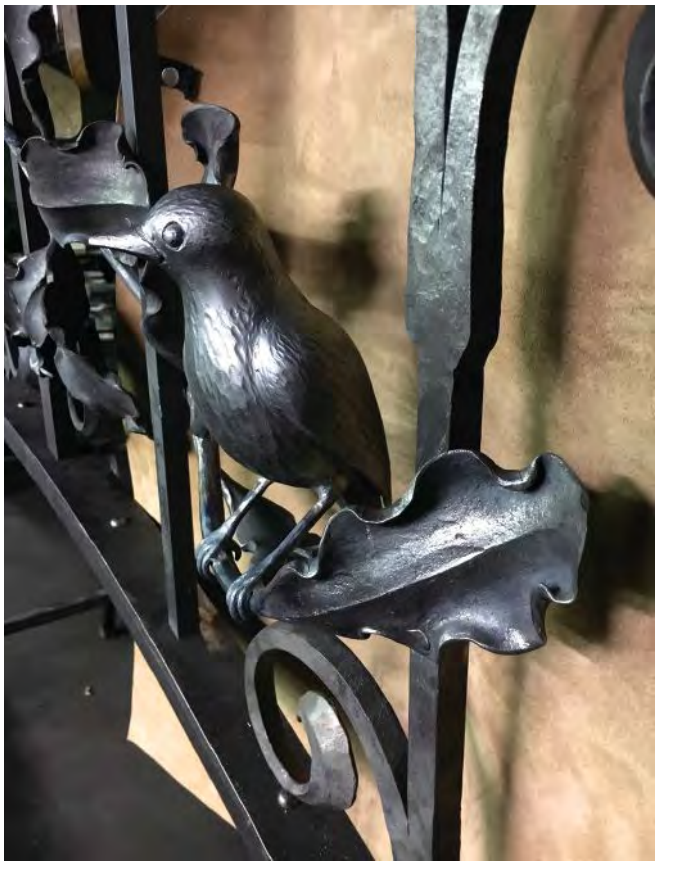
FAR LEFT The leading members of Covax Design and Atelier Szabolcs Nemeth, Gabor Szombathy and Zoltan Kovacs.

LEFT Old world techniques create distinct artwork, where the hand of the craftsman is recognizable.

LOWER LEFT The flying sparks make the forge welding the most spectacular task.

BELOW Study of the robin in plasticine prior to sculpting and forging in iron. The pair of robins decorate one of the gates' overthrow.



metalwork designer, is hard to miss in light fixtures and gates throughout the historic Yale campus. Though Yellin's shop was in Philadelphia, he learned his craft in Ukraine, and Kovacs suspects that 70 percent of the 240-odd blacksmiths working for Yellin at his peak were Eastern Europeans. "French, English, or German forging is totally different than the way Polish, Czech, Hungarian, or Ukrainian blacksmiths work," he says. "It's not just the different styles of design, but the hammer strokes; how they roll a scroll, how they forge; how they assemble elements. It's recognizable."

Kovacs adds that their goal was not to copy Yellin, but to put their own "knowledge" into the gates. "Even though he used different styles, and some designs are lighter, they are all recognizable as Yellin gates. If you put Yellin's original gates and our gates next to each other, there is a very similar feeling in line of design, so I would say Yellin was a huge influence."

Nonetheless, the gates incorporate many original figural and abstract elements that tie into the University and local symbolism. "The elm leaves, and the white oak leaves, which we've stylized, are references to New Haven, which is the Elm City, and the Connecticut state tree. The Mountain Laurel is the Connecticut state flower. On what we called Gate Number Four, the entrance to Pauli Murray College, we used two robins—also the state bird—sitting on a branch. And at the top there is a sperm whale, which is the Connecticut state mammal as well as the nickname of the nearby Saarinen-designed Ingalls Hockey Rink."

When it came to fabrication, Kovacs says he would have loved to use Monel metal, a corrosion-resistant alloy of nickel and copper much admired in the 1920s. "Yellin did gates in Monel but budget-wise it was not our material of choice." Traditional wrought iron was in the same category: very expensive and only available as a reclaimed material. "So

ABOVE Decorated knob of the manually operated and lockable cremone system.

TOP RIGHT One-of-a-kind forged lock plate.

RIGHT Studies and alternates made for each gate. The design team selected the most suitable one.

BELOW Assembled gate. All elements and assembly are traditionally made.

what we used is a regular mild steel, cold-rolled and hot rolled, but with all elements forged by hand in a traditional manner. There are no off-the-shelf parts in the gates." They used nuts and bolts but mostly the gates are riveted, which is part of the ornamentation.

Needless to say, the gates are quite large, with dimensions that vary around 4 feet by 7 feet for each gate leaf and heights about 10 feet to the tip of the gate overthrow. Weight was significant. "The gate for Benjamin Franklin College, which is filled with scrollwork, is the heaviest at about 1,600 pounds for one leaf, but it swings and operates very smoothly." Kovacs says the main, bottom bearings came from another supplier, but the top journals are theirs. "It's a very simple, traditional, forged bearing to which we added some oil bronze inserts so it will rotate much smoother and last longer."

Apart from the drawings, materials, and samples, Kovacs says the four gates took about 14 months to build, including painting. "We try to do everything traditionally, everything by hand. Even the welds are hand-forged together."

GORDON H. BOCK *is an architectural historian, instructor with the National Preservation Institute (www.npi.org), and speaker through www.gordonbock.com.*

BY SUSAN D. TURNER

The Hard Truth

With uses that range from utilitarian to decorative, concrete has been the building material of choice for centuries.

Concrete is a monolithic mixture of cement, aggregate, and water that can be poured flat or into raised forms on the jobsite (formed-in-place). Modern cement is typically Portland cement, and the curing time to full strength is 28 days. For the purposes of this article, the focus will be on the formation and repair of cast-in-place concrete. (Precast concrete is fabricated in reusable forms offsite and not covered in this article.)

HISTORY

The history of the formation and usage of concrete is very long and has gaps and parallel discoveries continents apart. Relevant to North America, the first manmade cement was created by Englishman Joseph Aspdin, who burned powdered limestone and clay in his kitchen stove in the 19th century to make what he named "Portland" cement. This invention evolved into bagged cement, which could be shipped and mixed onsite.

Today in the 21st century, cement is manufactured through a closely controlled chemical combination of calcium and silica, with small amounts of such naturally occurring elements as aluminum, iron, and magnesium found in the limestone. Making cement is a dry method, which starts with quarrying and collecting the principal raw materials.

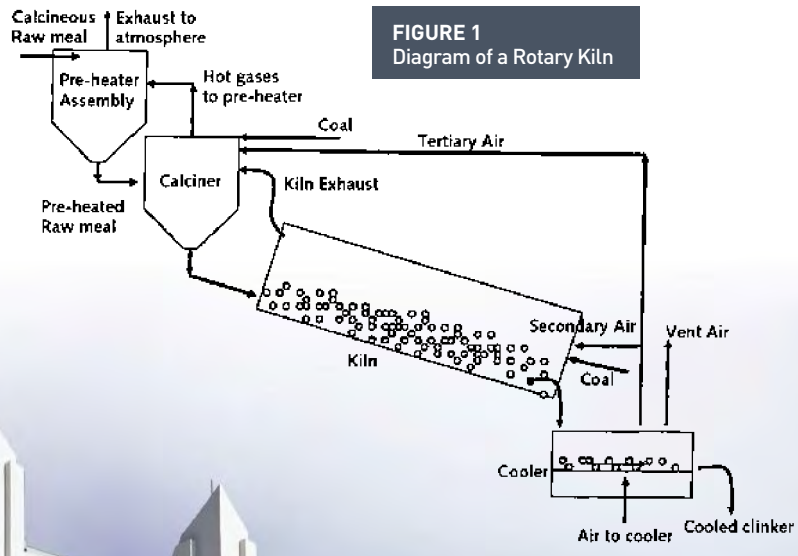


FIGURE 1
Diagram of a Rotary Kiln

URBANA ARMORY RESTORATION BY BAILEY EDWARD

Photo Courtesy of Bailey Edward

Figure 2 by Julie Green; Figures 3 and 4: photos courtesy of Bailey Edward

FIGURE 4
Concrete core taken for analysis after locating Rebar

FIGURE 2
Corrosion cell involving cathodic and anodic electrical flow

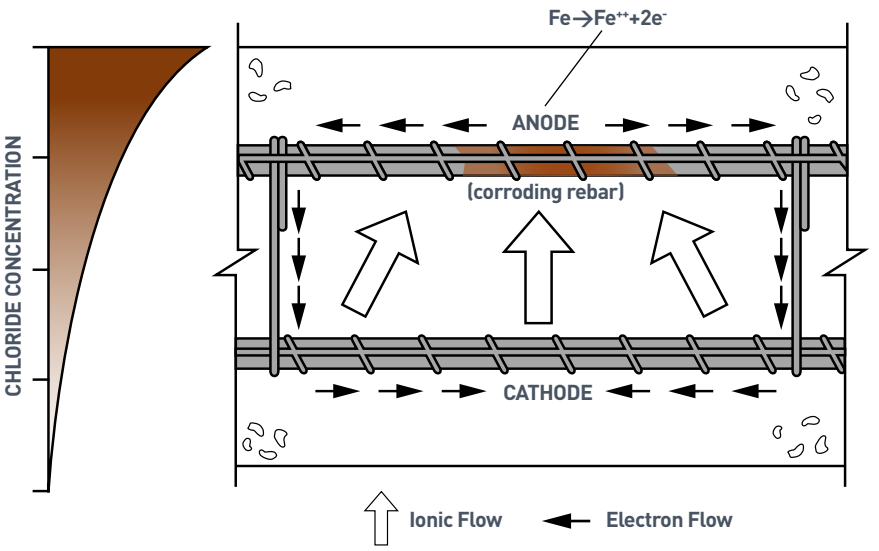


FIGURE 3
Rebar with shallow cover oxidizes, causing concrete to spall

The calcium component is derived from limestone, along with shells, chalk, or marl that is combined with shale and clay and crushed. This mixture is placed in a rotary kiln at 2700°F. ***(See Figure 1)*** The burning converts the mix to "clinker." Once cooled, clinker is finely ground to a powder and the resultant cement is mixed with sand and coarser aggregate. When water is added, the cement hydrates and forms a binder for the sand and aggregate, curing the whole into what is known as concrete. Concrete started off as a utilitarian material, being used in roads, dams, and bridges. Over time, it was utilized for building elements such as posts and beams, floor slabs and bearing walls, and as back-up to masonry. Around the 1900s, it began to be used for entire buildings as the exposed finished appearance.

INSTALLATION METHODS

Poured-in-place concrete uses forms fabricated to the desired configuration from wood, steel, or fiberglass. The material and the fabrication of the formwork play a large part in the final appearance. The resulting appearance can leave exposed form tie holes and seams visible, or the surface can be smoothed out with a thin, cement-based parge coat for a more refined appearance. Further, the form can be designed to provide dimensional thickness resulting in a decorative pattern such as woodgrain, patterns, or even "fins" that can be broken off to make an alternating rough/smooth appearance.

STRENGTHS AND WEAKNESSES

In compression, concrete is very strong. It also meets the air barrier requirements of ASHRAE 90.1 and the 2012 International Energy Code. The downside is that it is very weak in tension—thus the introduction of steel reinforcement, which provides the tensile support. The drawback of reinforcing steel is possible corrosion due to several processes, which results in damage to the concrete, as explained below.

TYPICAL FAILURE METHODS

Concrete can crack due to building differential movement or insufficient design. This can cause a structural issue that could require an engineering repair solution. Shrinkage of the concrete as it dries, or a lack of control joints in the pour, could cause hairline cracks.

The curing process that hardens the concrete is a reaction wherein the calcium silicates in the cement combine with water to create calcium silicate hydrate, calcium hydroxide, and heat. The resulting concrete has a high pH, which protects embedded reinforcing steel by limiting electrochemical transfer. Carbonation occurs as the concrete ages, a process that combines carbon dioxide with moisture in the concrete pores, creating carbonic acid. This lowers the pH to below 8.6, at which point electrochemical migration can occur between cathodes and anodes. ***(See Figure 2)*** The ferrous steel reinforcing bars, or rebar, can oxidize (rust) within the concrete due to this cathodic action, or due to shallow embedment, or moisture, which expands the cross section of the rebar. If it has sufficient embedment, the concrete will contain it. However, limited cover over the rebar permits the carbonation to reach the rebar more quickly, and with less concrete to resist the oxidation expansion, it leads to cracks, rust staining, and even pieces spalling off. ***(See Figure 3)***

APPROACH TO REPAIRS

Survey the building, mapping all the damage found. Previous repairs should be documented as such and checked for soundness. Nondestructive testing, such as ultrasound or ground-penetrating radar are helpful in identifying non-homogeneous materials and internal distress. Cover meters can identify when the concrete has insufficient depth of coverage over the rebar. Where concrete is suspect, tap it lightly with a stainless-steel hammer. Where concrete has internal delaminations, it will sound "punky" or "soft." Sound concrete will ring more musically. Identify localized damage that could be caused by an adjacent material, such as a handrail, or brick panels within the concrete.

Testing a shard of the concrete will identify components that comprise the concrete, such as proportions of the aggregate, sand, and cement. This information will reveal the concrete properties that you are trying to match, leading to a long-term, durable repair.

More invasive core testing can determine strength, petrography, chloride content, compressive strength, freeze/thaw properties, and the presence of carbonation. ***(See Figure 4)*** If the carbonated concrete is causing electrochemical attach on the rebar, there are ways to neutralize the field using cathodic protection, although this is a very expensive system which requires engineering. An alternate approach to deterring the carbonation process is to coat the concrete. This opens the coating discussion.

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ABOVE & Figure 5: restoration work by Harboe Architects, PC; Photo by Susan Turner

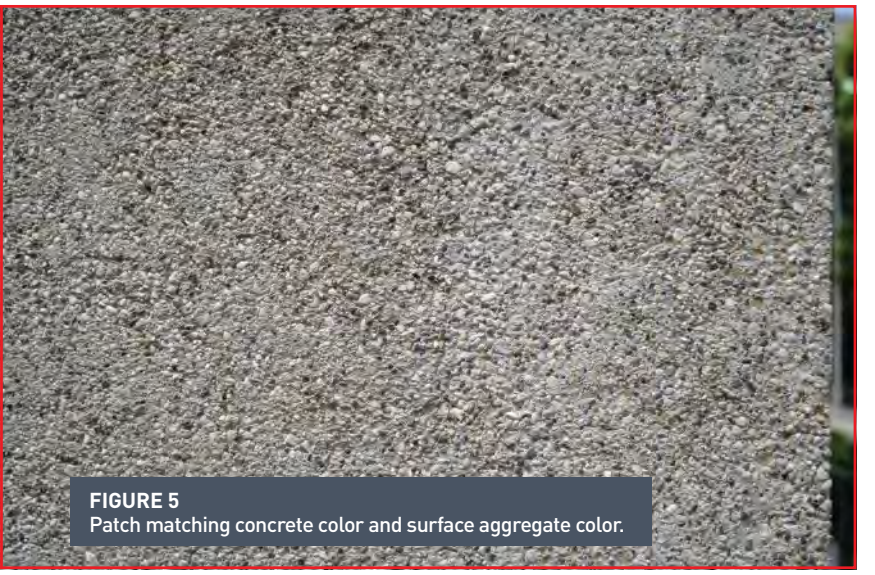

FIGURE 5
Patch matching concrete color and surface aggregate color.

FIGURE 6
Testing existing coating adhesion

FIGURE 7
Concrete formed patch installed with matching texture. Coating not yet installed.

Figures 6 and 7: photos courtesy of Bailey Edward

To coat, or not to coat? That is the question. When the original architect designs a building later identified for concrete repairs, it is important to understand whether the concrete was intended to be the exposed original finish, or whether it had always had a coating. It is possible to match uncoated concrete with a lot of worthwhile effort, involving tinkering with the cement color, aggregate size, color and exposure, and the surface texture. ***(See Figure 5)*** When coatings are determined to be the appropriate solution, such as to arrest carbonation, it is important to ensure that there is a sound substrate. Applying a coating not previously in place will fundamentally change the historic appearance, and it is not reversible. Even a clear water repellant could alter the color or sheen, and it could also change the dew point in the wall. If there is already a coating on the building, it must be tested to ensure it is fully bonded, and the subsequent coating must be compatible with the substrate. ***(See Figure 6)***

There are many types of repairs, depending on the symptom. First, the cause of the problem must be understood, then the cause must be treated before addressing the symptom. Once the cause is addressed, then the repair methods for the symptoms can be selected.

Where cracks are present, they permit water to enter. That moisture will freeze at low temperatures, expanding and causing further cracking of the substrate. If the cracks are not moving, they can be epoxy-injected or sealed with epoxy grout. If the cracks are active, they should be sealed with a more flexible material, such as a non-staining sealant, to permit the movement and prevent water ingress.

Where concrete has spalled and the rebar is exposed, the corroded rebar needs to be cleaned to bare metal and protectively coated to prevent further deterioration, before patching the concrete. If the rebar has experienced significant section loss, ideally, new rebar should be placed. Stainless steel is a good option to avoid future oxidation, if it is compatible galvanically with the existing rebar. If the spall is caused by the rebar being too close to the surface of the concrete, cut back the concrete to a sufficient depth to provide a repair with minimum recommended coverage of the rebar, as published by the American Concrete Institute (ACI). To replace the lost concrete, remove concrete at least ¾-inch back from the rebar to provide a bond, key the edges of the patch, and roughen the concrete bonding surface. To form the patch, the surface of the form needs to match the surface texture of the concrete to be visually successful. ***(See Figure 7)***

WHAT TO DO / NOT DO

Always approach the building holistically to ensure that the cause of the problem is understood, whether structural, moisture, movement, or cathodic deterioration. Once the cause is understood, address the cause to either remove it or mitigate it.

Avoid coating a building whose surface was never intended to be coated. It changes the building's appearance and creates an ongoing maintenance issue. When a coating is required to address moisture issues or carbonation, ensure the coating has the right properties for water shedding, vapor permeance, color, and texture.

ADDITIONAL RESOURCES:

www.cement.org/cement-concrete-applications/how-cement-is-made

Preservation of Historic Concrete (Preservation Brief No. 15) by Paul Gaudette and Deborah Slaton

Cleaning Historic Concrete by Deborah Slaton, Concrete Repair Bulletin, January/February 2000

Guide to Concrete Repair (ACI 546R-14) by American Concrete Institute, September 2014

Sustainability for Repairing and Maintaining Concrete and Masonry Buildings by ICRI Committee 160, Sustainability

Concrete Problems Today are Multifactorial—Root Causes by Hamid Khan, Concrete Repair Bulletin January/February 2019

The Repair of Concrete Structures, Second Edition, edited by R.T.L. Allen, S.C. Edwards and J.D.N. Shaw, Blackie Academic & Professional, an imprint of Chapman & Hall 1993

APT Bulletin: The Journal of Preservation Technology, Vol. 48, No. 4, Special Issue on Documentation (2017), pp. 29-36 Practice Points Number 16 Author(s): Ann Harrer And Paul Gaudette

The History of Concrete by Nick Gromicko and Kenton Shepard © 2006-2019 InterNACHI

SUSAN TURNER *is a Canadian architect specializing in historic preservation of national registered buildings. She is the Director of Architecture for The Tradesmen Group, a restoration contractor specializing in the repair and preservation of historic buildings. She can be reached at sturner@tradesmengroup.com*

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SKETCHBOOK

BY CHRISTINE G. H. FRANCK

On Columns, Classicism, and Creativity

How should our buildings look today?

Why do we choose to make our buildings look one way and not another? How should our buildings look? Two different but related questions, the answers to which are many and difficult to tease apart, for architecture operates on many levels.

Today, many who regard themselves as classicists all too often answer "how should our buildings look" with a resounding: classically correct! This is understandable as 21st-century classicism is still operating in recovery mode. The lacuna of what we simplistically call modernism nearly broke the chain of tradition preceding it. In this regard, we are not unlike our Renaissance predecessors.

Through their attempts to understand Roman classicism, Renaissance architects codified a classicism free from "barbarous invention."[i] Yet in a mere century, design transformed from Rossellino's chaste work in Pienza to Michelangelo's ebullient designs for St. Peter's. This oscillation between rational and emotional classicism would continue for centuries before being nearly exterminated.

Much emphasis in our renaissance has been placed on relearning the rules of classical architecture. Due in large part to the Renaissance, we see classical architecture as defined by five orders. Perhaps due to our quick-fix culture, we have not done as our Renaissance fathers did,

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Architectural Wood columns
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3

THE CHAPEL OF THE SACRED HEART OF JESUS
SIOUX FALLS, SD
Franck Lohsen McCrery, Architects
Custom Architectural Wood columns
Photograph courtesy of Franck Lohsen McCrery, Architects

4

HOLY CROSS CHURCH
RUMSON, NJ
McCrery Architects
Custom Architectural Wood columns and pilasters
Photographer: Brett Drury Architectural Photography

5

PAGE RESIDENCE
BEN AND LIBBY PAGE'S PERSONAL RESIDENCE IN NASHVILLE, TN
Di Biase Filkoff Architects, P.C.
Architectural Wood columns, piers, and pilasters

turning to origins, learning anew, letting that be transformative. Jeffrey L. Davis, founder and president of Chadsworth Columns reflects, "Classical Architecture to me is not just language—it is a rhythm. The rhythm of place. When you travel to Andalusia, Istanbul, or Petra, and see architecture rooted in the classical yet so changed by each place, you see interpretation and creativity."

How can we look afresh at classical architecture? Rather than learning rules of how to correctly use the five orders, let us think instead of the orders operating in three primary ways: structural, formal, and symbolic.

Columns and beams can be the actual structure of a building, with the depth of a beam and the spacing between columns relating to suitable span to depth ratios. The columns and beams may also be analogous.[ii] For example, the visible ceiling beams may not be the actual beams holding up the floor above. Whether actual or analogous, the beams of a ceiling tell us something about the structure, like the pairing of columns on the Four Seasons Ocean Club [2], which make the wide bays appear more structurally stable.

Each design has issues it responds to or resolves through formal means. The classical orders are our primary means for making those resolutions. For example, imagine a long façade. The classical orders may be used to counter the deadening effects of a run-on façade by bringing more emphasis to the vertical. Additionally, through scale, proportion, and ornament, the formal composition helps develop the character we intend. The delicate columns around the altar at St. Joseph's Cathedral chapel and the corresponding feeling of intimacy versus the soaring arches on columns at Holy Cross and the resultant grandeur [3], [4].

Finally, the classical orders, due to their use through history in common ways, are signifiers of meaning, whether through denotation or exemplification.[iii] For example, columns framing an opening with a pediment on top denotes entry, while the bulging entasis of a column exemplifies the gravity load [1], [5].

6

COURIER SQUARE IN CHARLESTON, SC
Robert A.M. Stern Architects
Custom Ionic Capitals
Photograph courtesy of Jeffrey L. Davis

We often refer to classical architecture as a language. One that operates as structure, form, and content. There is much new to write with this language, a sentiment shared by Davis who recounts, "I attended the first ICAA Summer School in 1992 after I began Chadsworth and had been studying column proportions, wondering if there was a perfect formula. I was thinking about producing a fiberglass column to improve the industry standard and wanted ours to be the most correct. It was a revelation to realize afterward that it is a language."

We know this language. We should worry less about rules. After all, which are the right rules? Let us learn more as children do, through imitation and imagination. Doing so, we may shake off the stupor of correctness and emerge into a new renaissance of the classical [6].

"It all starts with the architects. Those who understand classical architecture usually specify everything concerning the dimensions of the columns, requiring custom cutters for all profiles. When having to cut costs, they trust our top end columns and profiles we have developed over many years. Some want to specify all the profiles, have them made in wood, then produced in our PolyStone (FRP) material. We also have less expensive lines which modify some dimensions and allow a little less flexibility. Every column, every project is unique for us." Jeffrey L. Davis, founder and president, Chadsworth Columns.

SOURCES

[i] Andrea Palladio, *The Four Books of Architecture,* Dover Publications (1965)

[ii] For more on analogous structure, see Edward R. Ford, *The Details of Modern Architecture,* Vol. 1, MIT Press (2003)

[iii] For more on denotation and exemplification as ways of symbolic reference, see the essays and books of Nelson Goodman, particularly *Languages of Art,* Hackett Publishing Company, Inc (1968)

BY JUDY L. HAYWARD

A Contractor's Perspective

Trades, technology, and teamwork on the Phillips Collection project.

Beneath this well-preserved façade resides state-of-the art mechanical, electrical, plumbing, climate, and security controls, thanks to a major rehabilitation in 2018.

All photos by David Madison Photography

In 2018, a project was undertaken by the Phillips Collection, America's first modern art museum, to upgrade the mechanical, electrical, and plumbing systems, improve access and egress, and update controls for climate and security in the 1897 mansion that had been built for D. Clinch Phillips, his wife, Eliza Laughlin Phillips, and their sons, James and Duncan.

Duncan Phillips and his mother founded the museum in the family home as the Phillips Memorial Gallery in 1921. A fourth floor with a mansard roof and skylight was added to the three-story, flat-roofed Georgian Revival home in 1923. The family moved in 1930 and the Washington, D.C ., residence at Q Street and Massachusetts Avenue became the repository of the family's art collection. Over the years, buildings were added or adapted in the neighborhood, but the original mansion had not been updated for energy, codes, and functionality in more than 40 years.

UNKNOWN CONDITIONS

No matter how thorough preconstruction investigations and diagnostics are, when working with existing and historic buildings, conditions inevitably come to light that can't be fully understood until work commences. Experienced contractors such as Consigli and other team members can predict where the unknown variables will come to light so they advise owners to plan for contingencies with adequate reserves for budget and construction time. For this project, the end date was hard and fast because an annual gala that raises substantial funds for the institution had to take place. Shortly after work on the 120-year old building began, it was determined that the space needed for the new mechanical equipment was inadequate. Consigli project superintendent Adam Cirigliano worked with his team to develop a 3D model of the building that would help them work through a solution. By using 3D modeling, the field measurements could be adjusted on the digital model and the size and placement of equipment could be tested virtually before fabrication and installation. Weekly meetings and harnessing the 3D modeling to draw to the highest level of detail to guide the construction process put the project back on schedule. It proved to be a time

The Music Room features a coffered plaster ceiling, a parquet floor, and elaborate millwork; its protection was a driving consideration of the construction sequence and measures for temporary protection while the original flat roof was modified to become the floor for new rooftop mechanical equipment.

saver when construction and installation occurred. Cirigliano says technology is a "weapon for success" but human beings must guide the process—asking the right questions and thinking creatively to arrive at the right solutions.

PROJECT SPECIFIC CONSTRAINTS

The original mansion building serves largely reception and administrative functions, but there are some key features to protect, such as the Music Room and a room of wax models and casts that could not be moved and required dust protection. Cirigliano credits the craftspeople involved with clever solutions and meticulous attention to work practices. Plaster, vaulted ceilings, ornate millwork, parquet flooring, and other historically significant details had to be protected. Structural steel was added to meet modern loading requirements along with the systems upgrades. The question most frequently asked was, "Where can we hide this?" Obsolete chimneys were among the areas where equipment, cables, and pipes could be concealed.

A SIGNIFICANT ROOF

The museum is a prominent property in Washington, D.C.'s, Dupont Circle neighborhood. The local preservation commission reviewed the project and stressed the importance of preserving the existing slope of the mansard roof despite the need to add mechanical equipment to it. A penthouse addition was designed to add space and to screen the enormous chiller that would be part of the new mechanical system. Flashing and ornament were custom-fabricated and prepatinated to maintain the appearance of aged copper. Cirigliano credits David Boo and DJB Contracting of Maryland for their skills. DJB Contracting was awarded a Washington Building Congress 2019 Craftsmanship Award for this project.

AN OLD ROOF BECOMES A NEW FLOOR

In addition to protecting the roof line, a new floor needed to be installed beneath the mansard roof to protect the artwork and historic fabric below. The construction sequence was critical, so Cirigliano turned to an engineer with extensive experience in construction sequencing for other projects, Maryland-based engineer, John O'Connor, of Pawtuxent Engineering Group. On his advice, the old flat roof was reused as the new floor. They shored the perimeter walls and roof and then cut the roof free, lowered the roof by four feet, installed structural steel, and transformed the old roof into the new floor for the mechanical upgrades.

Good communication and a desire to work together fueled the success of this project. It takes a great project superintendent to bring the subcontractors together when the challenges of construction unfold. Adam Cirigliano enjoys his work and the challenges.

THE PROJECT TEAM

ARCHITECT Bowie Gridley

ENGINEER Simpson, Gumpertz & Heger acquired the D.C. regional office of Keast and Hood, who worked on this project.

MECHANICAL Mueller Associates, Inc.

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LEFT A penthouse and screening conceal the new rooftop mechanical equipment.

BELOW Newly installed, pre-patinated copper shingles and flashing blend seamlessly with the mansard roof on the 1897 mansion, the original museum building for "America's first modern art museum."

ADVICE FOR THOSE WHO ARE CONSIDERING CONSTRUCTION MANAGEMENT AS A CAREER

We asked Cirigliano what advice he would give to young people considering a career in construction management. "You struggle through," he says. "Midway through the project, you feel at times like nothing is going the way you want it to go, but you stay open-minded and the solutions come; you forget the struggle and then you get to experience the satisfaction—it is pretty much like this on all jobs." Cirigliano has a degree in architecture, but the best training is "on-the-job," he says. Understanding how buildings are built and having time onsite to observe the details is the best way to learn about construction and managing projects.

JUDY L. HAYWARD *is executive director of Historic Windsor, Inc. and the Preservation Education Institute. She serves as education director for the Traditional Building Conferences Series and Online Education Program. She blogs and writes this* **Techniques** *column regularly for* ***Traditional Building.*** *She specializes in the development of educational programs for builders, architects and tradespeople. She can be reached at jhayward@aimmedia.com or 802.674.6752.*

BY GORDON H. BOCK

Safer Windows for a Signature Museum

Blast resistance adds another twist to building reproduction windows.

Photos by Jeff Wingo

Making new windows that are faithful matches with historic buildings is tricky enough, but when they must also resist the new reality of potential terrorism blasts, the task can be daunting. The challenge is juggling myriad dimensions, along with code and energy specs, but specialists like the St. Cloud Window Inc. of Sauk Rapids, Minnesota, are experts at finding that sweet spot.

When it comes to the window business, St. Cloud Window divides their expertise into three window types: acoustic, historic, and custom. "In any given year, about 40 percent of our revenue is historic, and about 40 to 45 percent is acoustic," explains Casey Mahon, president and CEO, "and sometimes it's both. We don't necessarily target the blast resistance market specifically, but a lot of times we find it's one of the performance parameters, with some projects requiring it, some not."

That was certainly the case with the 1874 Renwick Gallery in Washington, D.C. A $30 million renovation completed in 2015, it included replacing all exterior windows with new, energy conserving units that replicate the originals. Near the top of that to-do list was the force protection requirement

for blast resistance—no surprise at a site paces away from the White House and where the consequences of 9/11 are an ever-present reality.

The blast resistance of a window is only as strong as the building's ability to hold it in place, explains Mahon. "I think the principle driver is to retain the frame in the hole and, in the event of a blast, prevent glass shards from spraying into the room. So, if you want that force protection, you need to secure the window frame." At the Renwick, Mahon reports that the walls were actually quite sound. "The sills needed some steel reinforcement," he recalls, "but the jambs and the heads are all brick and stone, so we had good anchorage points there." They used epoxy anchors—basically threaded rods inserted into epoxy-filled holes and bolted through the window frame—with anchor points located anywhere from 5½ inches to 18 inches on center. "So, it's a little different than simply driving a few screws, as it were."

The window frames are thermally broken aluminum, with profiles designed to meet the sight line requirements for replicating the historic windows. "I believe we cut over 30 new shapes for that particular project in order to achieve very precise historical proportions and dimensions, and that's typical for us when we do historic jobs of this nature."

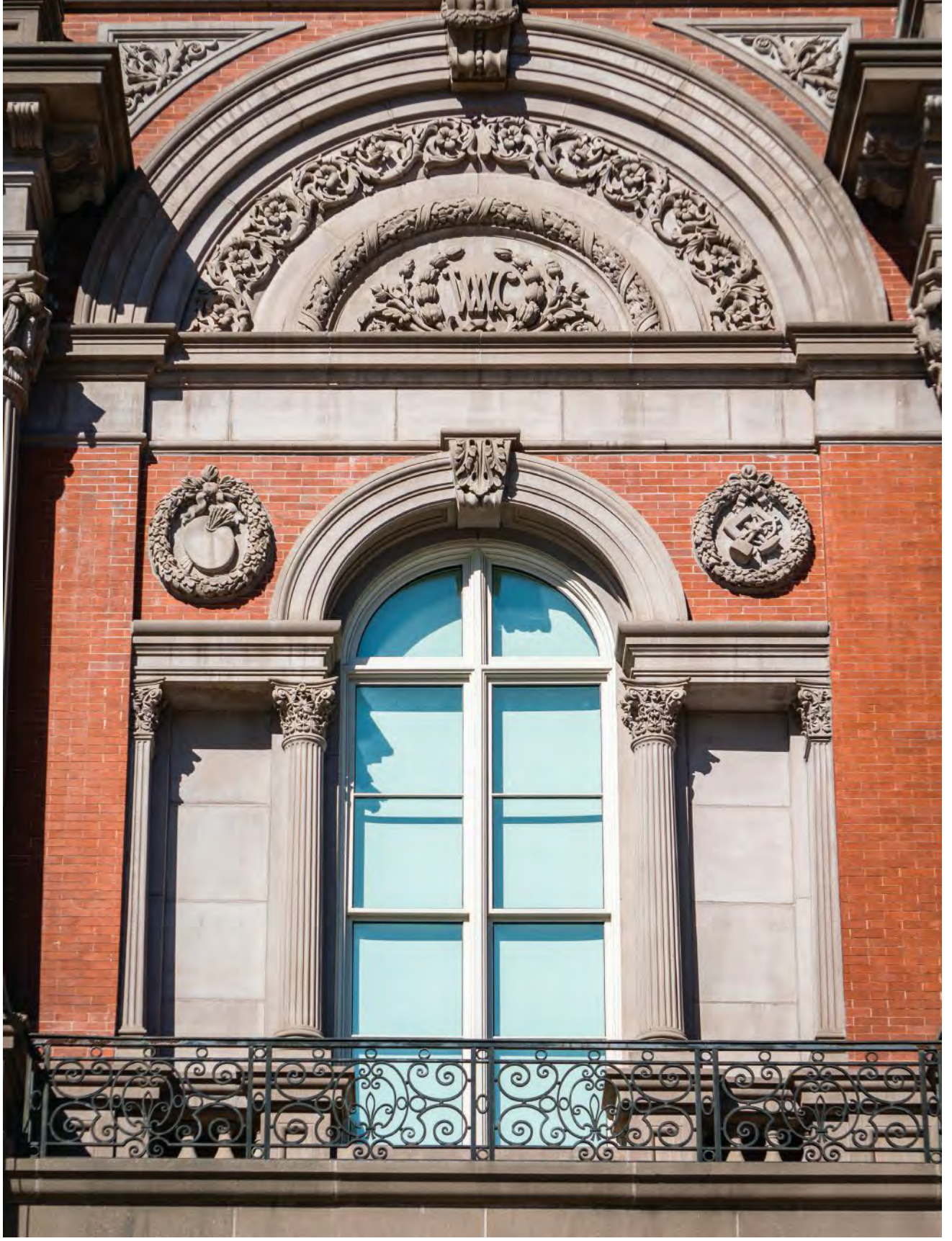
Mahon says they work off a basic frame design, then elaborate it with new shapes to achieve the required sight lines. "That's the beauty of aluminum. You can replicate those shapes relatively easily, so long as you don't invade the primary frame itself. However, if you get into a significant change in the primary frame, then you need to retest and recertify the entire window design."

Indeed, performance parameters—from thermal and structural requirements to air and water penetration—can present challenges. "At times they work against your ultimate design objective, and some historic dimensions simply cannot be replicated today because they're so small." The answer he says is to be prepared for those challenges. "What we find is that if you can't go wider to meet the design objective, you can go deeper; so, you can get a little narrower sight line by extending the frame depth, or the mullion depth, a little deeper into the wall section. That will help with the structural load requirements."

Mahon says that the base model for the Renwick windows was their 564 series, which is a 5-inch system. "Everything in that window was fixed glass, but it has an offset sash arrangement so that it appears as a double-hung window." After adding the profiles for the brick mould and interior finishes, the overall frame depth grew to 9½ inches. They created the separate brick moulds on the outside and interior trim shaped for the inside, both for the sake of the extrusion process and ease of handling at the time of installation. "Windows the size of Renwick's get extremely heavy, so typically you first set the exterior brick mould—the 'pan' in our lexicon—and get everything sealed up. Next you set the primary frame inside of that, then you set your interior trim pieces inside of that." This way everything can be installed from the interior, "which is nice too because you don't have to scaffold the building."

As he explains, the blast-resistant window—here designated 564-I for impact—is essentially an insulated glass unit but with greatly enhanced physical properties. "The composition gave it an overall 1½-inch thickness comprised of ¼-inch glass on the outboard light, and 9/16-inch laminated glass on the inboard light separated by an 11/16-inch spacer." This configuration not only affords blast protection but also all the coatings that are needed to achieve the required thermal performance.

Balancing all these dimensions and requirements within a historical window is no open-and-shut case. "But today's window is so far superior to the windows of old," reflects Mahon. "It keeps it interesting, and it keeps it fun."



OPPOSITE Windows by St. Cloud Window match the original 1860s sightlines, but are also blast-proof and controlled ultraviolet and moisture exposure to protect the artwork.

ABOVE The renovation of this National Historic Landmark restored the original 19th-century window configuration throughout with SCW564i impact windows.

GORDON BOCK *is an architectural historian, instructor with the National Preservation Institute (www.npi.org), and speaker through www.gordonbock.com.*

PROJECT Castle at Boston University

ARCHITECT Finegold Alexander Architects

fortified for the future

Finegold Alexander Architects resurrects Boston University's iconic Castle to serve as the Dahod Family Alumni Center.

BY KILEY JACQUES

Built in 1915, this Tudor Revival-style mansion was originally a private residence belonging to businessman, playwright, and poet William Lindsey, Jr. Located at the corner of Boston's Bay State Road and Granby Street, it is a part of the city's Back Bay West Historic District. The 15,371-square-foot estate, designed by Chapman & Frazer, was modeled after Athelhampton Hall in Dorsetshire, England—a country frequented by the late Mr. Lindsey. In 1939, the Castle, as it is commonly called, was donated to Boston University, whereupon it housed school presidents and their families until 1967, at which point it was converted into a function hall. By 2015, it had seen better days.

"The building was at a point where a lot of deferred maintenance was coming to a head," says Finegold Alexander Architects President Rebecca Berry. "It was time to do a major renewal/restoration, yet at the same time, there were some amazing historical interiors that were quite intact—they just needed a little buff and polish and some infrastructure to make them sing." On the exterior, the sandstone masonry, slate roofs, and wood windows were key target areas. Water was infiltrating the walls, the roof was leaking, and the windows didn't seal properly. Furthermore, the building was not ADA compliant, a considerable limiting factor in terms of the building's proposed usage, namely the new Dahod Family Alumni Center.

The building would also need to accommodate a commercial kitchen, an expanded campus pub, a faculty dining room, and a historically sensitive new addition with a terraced roof. The plan called for locating the kitchen in the basement and adding a pub into a 1,000-square-foot addition at the rear of the building, which is not visible from the Historic District. "It was a matter of finding spaces in the building and determining what needed to be done to bring it back to its former glory," Berry explains.

RESURRECTING THE FAÇADE

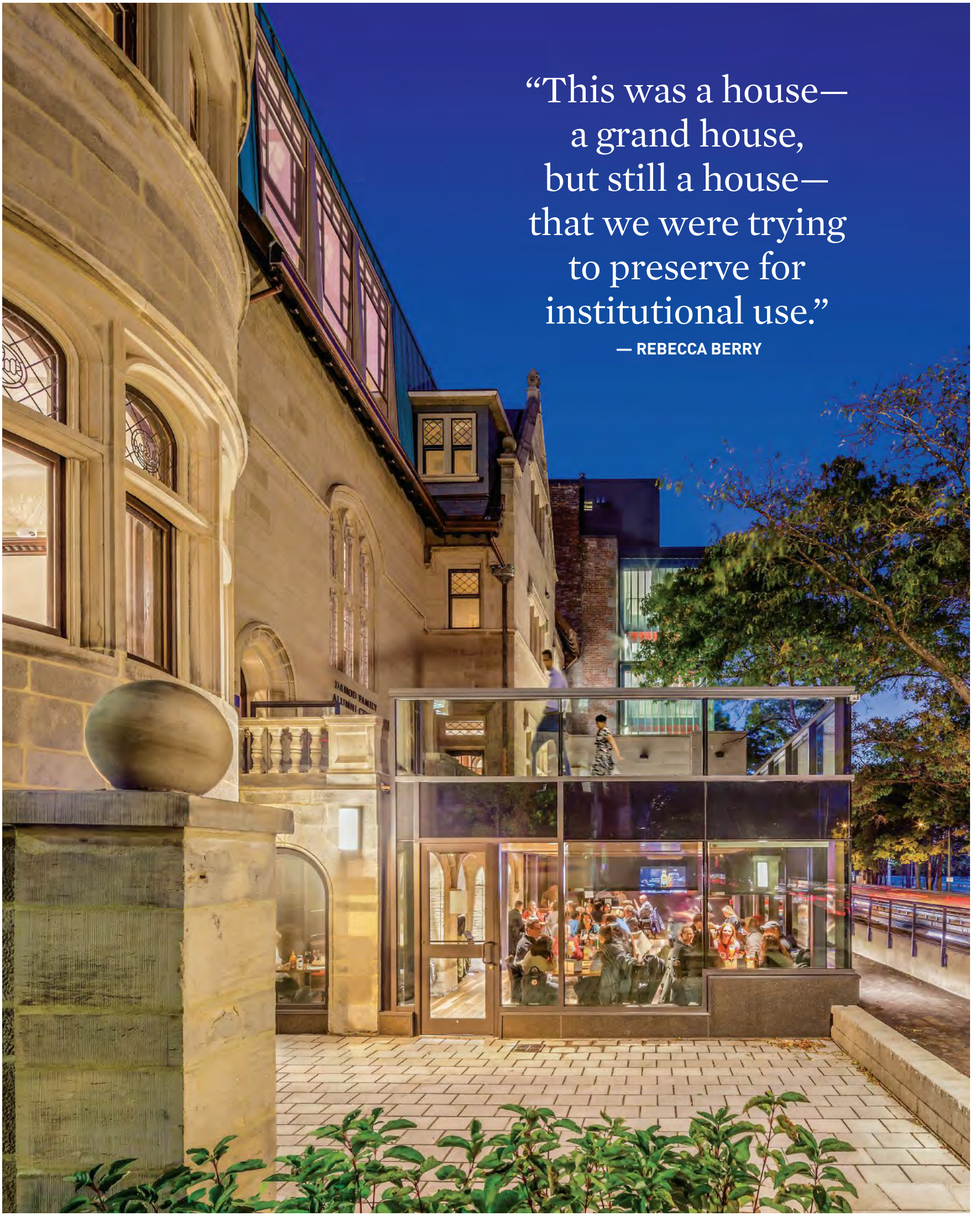
To start, the Finegold Alexander team conducted a comprehensive assessment of the building, with a focus on the exterior. "It was in worse shape than had been feared," Berry recalls. "The masonry had some real pain points—eroded stone and loose gable-cap stones, which were a potential hazard." The sandstone was meticulously cleaned and assessed and, in many areas, existing stones that had been worn beyond repair were replaced. Interestingly, stone pillars from a fence being removed to make way for the addition were salvaged and cut to make new stones used for repairs. The high level of difficulty is owed, in part, to the sandstone's texture. To mimic it, masons hand hammered all new stone onsite.

As for the roof, it was removed entirely, down to the original sheathing, which was just boards. The team added a new layer of plywood to create a structural diaphragm for shear, as well as insulation. They left an air gap and added another layer of plywood sheathing covered in roofing membrane—essentially a second roof assembly. This resulted in an air pocket vented from the bottom of the roof; the air flows under the secondary roof sheathing and up through a vent at the top. Heat is then trapped inside the building and the roof stays cold in the winter, meaning it is not exposed to the freeze-thaw

Photo by Raj Das Photography

The Dahod Family Alumni Center as seen from Storrow Drive. The new addition was designed to complement, rather than mimic the historic structure, and to harmonize with the adjacent Leventhal Center, completed by Goody Clancy Architects.

The building's eclectic Tudor detailing was revealed by the exterior restoration. The castellations speak to the building's long-time moniker, The Castle.



> "This was a house—
> a grand house,
> but still a house—
> that we were trying
> to preserve for
> institutional use."
>
> **— REBECCA BERRY**

Photos by Raj Das Photography

ABOVE The restored plaster ceiling in the library. Hidden A/V and HVAC upgrades enable the use of this space for meetings, conferences, and private dining.

CENTER The fine woodwork in the music room was restored as was its original color—discovered through paint analysis.

OPPOSITE Faculty dining in the music room. A new equipment lift was located in a former elevator shaft, enabling food transport from the basement main kitchen to the first-floor warming kitchen.

cycle, which extends the life of the slate. "This is the Cadillac of roof systems and it's how you get your slate to last 100 years," Berry says, noting the engineering ingenuity the work demanded. "The slate and copper work was very intense. We had many conditions—gable ends, dormers, double valleys—every roof condition you can imagine on top of a small building." The team also performed seismic upgrades, which meant adding tie downs between the masonry and the roof structure.

All of the windows were removed and restored—none were replaced. Many are leaded and needed to be taken apart completely and re-leaded. When they were rehung, new sashes and weatherstripping were added to stop air infiltration, which has had a huge positive impact on occupant comfort (as did pointing the masonry, which helped to seal gaps). Additionally, they were able to find and match original paint colors on the windows.

HISTORIC INTERIORS FOR TODAY

Inside, the primary challenge was upgrading the climate control and mechanical systems. The building had been functioning with radiators and window-unit air conditioning. They were replaced with a new variable refrigerant flow (VRF) system as part of the high-efficiency HVAC system. They also needed to account for significant air flows from the new kitchen, which itself required the restructuring of nearly half of the basement floor—it had been servants' quarters divided into small rooms. The team "shoehorned in" mechanical equipment in an effort to maximize square footage for the pub. "We managed by hook and by crook to hide and couch the mechanical equipment as best we could to preserve the historic nature of the building," Berry explains. "Dealing with those kinds of modern systems in a building like this is not easy." Other structural endeavors included shifting a wall in the hallway to make room for a food service lift. That entailed the removal of all millwork—later replaced—and the rebuilding of a coffered ceiling.

In more cosmetic terms, Berry explains how Mr. Lindsey traveled regularly to England, where he handpicked all manner of architectural salvage, which he brought back to his architect to weave into the house. Consequently, each room is styled in a different period—everything from Classic Victorian to French Regency

LEFT: Photos by Jane Messinger; RIGHT: photo by Cydney Scott

to Arts & Crafts and Medieval. "Saying it's eclectic is an understatement," Berry muses. The precious nature of the collection meant all interiors required stringent protection. The lengths to which the team went are evidenced by the oversized box built around the light fixture in the main space—it hung off the protection used on the upper-floor gallery rail.

A NEW LOOK

The addition took the form of a simple glass box. Asked about the contemporary treatment, Berry responds: "There were a couple of drivers behind that—the first of which was how the building would be seen at night. The addition is highly transparent. We did some work with the lighting so the original stone wall, which is behind the addition, really pops out. When you drive by, you see three stone arches all lit up through the addition. The glass is kind of a vehicle to bring the historic architecture to the fore."

Another influential factor was the adjacent Leventhal Center, formerly the Hillel House. Built in the 1950s, Berry describes it as "a midcentury-modern piece of architecture." When that building was renovated to be the Admissions Center, a contemporary glass structure was added to its rear elevation. The Castle's addition complements that project.

The new addition is structurally independent of the masonry building—it needed to be seismically separate. The two are connected by a long expansion joint. Because the Back Bay is infilled with silt, every building is on piles. To build the addition, they needed to drill mini piles, resulting in a very expensive foundation considering the diminutive size of the structure.

Three years in the making, the Dahod Family Alumni Center opened in September 2018. On course for LEED Gold certification under Commercial Interiors, the Castle stands as a remarkable example of historic preservation and adaptive re-use. It now houses the Alumni Relations office, Fuller's Pub, a 1,000-square-foot kitchen, faculty and staff dining rooms, and informal seating areas for alumni to work and socialize. Furthermore, the upper floors were connected to the Leventhal Center for universal accessibility. In other words, it functions well beyond its original intent. "This was a house—a grand house, but still a house—that we were trying to preserve for institutional use," says Berry, who looks forward to seeing how it performs in the years to come.

KEY SUPPLIERS

ARCHITECT
Finegold Alexander Architects

GENERAL CONTRACTOR
Suffolk Construction

MASONRY
Chapman Waterproofing Company

ROOFING CONTRACTOR
Gilbert & Becker

WINDOW RESTORATION
Window Women of New England

WINDOW LEADING
Blackwell's Glass

STRUCTURAL ENGINEER
Thornton Tomasetti

M/E/P ENGINEER
WSP

CIVIL ENGINEER
Nitsch Engineering

FOOD SERVICE
Crabtree McGrath Associates, Inc.

COST ESTIMATOR
Fennessy Consulting Services

LIGHTING DESIGNER
Sladen Feinstein Integrated Lighting, Inc.

CODE CONSULTANT
C3 Commercial Construction Consulting, Inc.

SPEC WRITER
Kalin Associates, Inc.

ENVELOPE CONSULTANT/ CONSERVATIONIST
Building Conservation Associates, Inc.

INTERIOR PHOTOGRAPHY
Jane Messinger

EXTERIOR PHOTOGRAPHY
Raj Das Photography

BOSTON UNIVERSITY PHOTOGRAPHY
Cydney Scott

PROJECT Inman Admissions Welcome Center at Elon University

ARCHITECT Robert A.M. Stern Architects

admission standards

Robert A.M. Stern Architects designs a university welcome center with a presence that creates a whole new approach to the campus.

BY NANCY A. RUHLING

PHOTOS BY PETER AARON/OTTO FOR ROBERT A.M. STERN ARCHITECTS

Elon University's Admissions Welcome Center, designed by Robert A.M. Stern Architects, is in a spare Georgian style.

Elon University, the private liberal arts institution in the namesake North Carolina town, takes great pride in rolling out the red-brick carpet for prospective students. As some 75 percent of the school's 7,000 undergraduate and graduate students are from out of state, first impressions are of premier importance.

For many years, the university, which was founded in 1889, had been welcoming students to its 656-acre suburban campus in a humble manner—introductions were made and tours departed from a small house. When the university decided to build a new admissions/welcoming center, it commissioned New York City-based Robert A.M. Stern Architects to design a larger building more in keeping with the historic character of the campus.

"Like most colleges, Elon University had a welcome center that was an afterthought," says Kevin M. Smith, AIA, the Robert A.M. Stern Architects partner in charge of the project. "Elon's decision to build a purpose-built admissions center was part of a general trend among institutions of higher learning to give prospective students and parents more considered introductions to their campuses."

The university asked the Robert A.M. Stern Architects team—in addition to Smith, the leaders were senior partner Robert A.M. Stern, FAIA; partner Graham S. Wyatt, FAIA; and project manager Silas Jeffrey; along with architect of record CRA Associates of Chapel Hill, North Carolina—to help select a new, more prominent site for what came to be christened the Inman Admissions Welcome Center. "We were asked to consider how this building would relate to the others on campus," Smith says. "And we were asked to help define a new green space that would become a future quadrangle."

The Inman Admissions Welcome Center was moved to the northeastern part of the campus and erected on what had been a parking lot. "There was no old building to tear down," Smith says, "so, essentially, we had a blank canvas." Nor were there any other historic buildings close by. Its south façade faces the main library, a utilitarian red-brick building that dates to the 1980s. "The library is not a beauty-pageant winner," Smith says, adding that neither are the fraternity houses farther north. "As part of the project, we planned a potential extension to the library."

The team chose what Smith calls a "spare brick Georgian" style of architecture that is in keeping with the oldest buildings on campus. "After a fire in the 1920s destroyed the original buildings, Elon rebuilt in the Georgian manner on a budget," Smith says. "One of the beauties of spare Georgian, then as now, is that it enables you to build handsome buildings cost-effectively. It doesn't require a lot of fancy brickwork, and the Inman Center's roof is asphalt, not slate, another feature that saved money."

The two-floor, 30,000-square-foot red-brick building, austere and elegant, features a central rotunda topped with a cupola. It is framed by wings anchored by open loggias that were inspired by others on campus. "There was no single historical model for the building," Smith says, adding that the bow bay that overlooks the campus is fancier than any other architectural elements at the university. "Even though the materials are humble, it projects a feeling of quality."

Yet, it's designed to attract attention. "It's the first building people enter when they arrive for tours," Smith says. "It had to have enough presence to hold its own. The building creates a whole new approach to the campus. The cupola is visible from a distance—it catches the diagonal view."

He adds that because the building presents all four sides to public view, special consideration had to be made for mechanicals. The building doesn't have a back or a basement, so the air and heating systems were placed in a well on the roof where they cannot be seen. Trash receptacles were sited alongside those of neighboring buildings, again, out of sight.

To make prospective students and their parents feel right at home, Smith says the Inman Admissions Welcome Center was designed to look like "a nice English country house." Visitors drive up to the building,

ABOVE First-floor galleries, filled with natural light and seating, run along the south-facing terraces.

CENTER In the atrium, the place where prospective students and their parents enter, soaring ceilings are paired with comfortable couches to create the feel of a living room in a grand, private home.

OPPOSITE Stairs to the second floor, which houses offices, rise behind a double-height arched opening in the atrium's west wall.

park, and enter the atrium, a soaring double-height space that is impressive yet intimate. Resembling a comfy living room, it's furnished with sofas that invite visitors to sit and stay while sipping iced tea on a hot day.

Student guides greet them and lead them along a sun-drenched gallery, complete with window benches where they can sit and take in the views, to the auditorium to view a film about the campus. The windows in the screening room are designed to frame the landscape. Two pairs of double doors lead outside to the lawn where the tours begin. The second floor houses the financial aid and admissions offices.

"The Inman Admissions Welcome Center is designed to send a message that Elon will be a good home for your student," Smith says. "The whole campus has a somewhat domestic feel, particularly the older parts. The interiors of the other 1920s buildings are utilitarian; the interiors in Inman, in a traditional-contemporary style, are designed to be welcoming."

Smith says that he's received a lot of good feedback from staffers about the design of the building. "Everybody loves it," he says. "I'm proud of the fact that we have shown that, with a limited budget, Georgian can be used to impress and speak eloquently to what Elon is all about."

While the work for the Inman Admissions Welcome Center was underway, Robert A.M. Stern Architects was asked to design the new business school building, Sankey Hall, which, along with the Inman building, will frame the new quadrangle.

In the southwest corner of the campus, the Stern team designed a glass pavilion for Elon's School of Communications. It links McEwen Hall and the firm's new Schar Hall, which includes a 250-seat movie theater to showcase student productions. The separate Steers Pavilion, to the east of Schar Hall, houses a media lab. It will be mirrored by another pavilion that will become the commons for a neighborhood of existing residence halls.

These projects, Smith says, have the same sense of graciousness as Inman, an attribute that he hopes is carried forward in the university's future buildings. "We like to say that we do portraits of our client institutions, not self-portraits," Smith says. "In this case, with Inman, we have accomplished that. It may not be John Singer Sargent, but it's pretty darn good."

"I'm proud of the fact that we have shown that, with a limited budget, Georgian can be used to impress and speak eloquently to what Elon is all about."

— KEVIN M. SMITH

PROJECT Decatur House
ARCHITECT Franck & Lohsen Architects

Foyer front entry of Decatur House off Lafayette Square facing west to courtyard and second floor.

Photograph by Bruce White / Copyright White House Historical Association

A HOUSE *reawakened*

One of the capitol's oldest and most prestigious homes, the Decatur House has been remade—in its own image.

BY KILEY JACQUES

When Stewart McLaurin, president of the White House Historical Association (WHHA), called Susan Watkins of Franck & Lohsen Architects to ask if she would help the effort to restore the first floor of the Decatur House in Washington, D.C., she responded with a resounding, "Of course!" As the daughter of a U.S. Navy admiral who raised his family within the walls of multiple important historic homes, Watkins was keen on the commission. Built between 1817 and 1819 by Neoclassical architect Benjamin Henry Latrobe for Commodore Stephen Decatur and his wife, Susan Wheeler, the house, which sits at the northwest corner of Lafayette Square just blocks from the White House, is Federal in style and as familiar to Watkins as a beloved old coat. "When Stewart gave me this mission, he said, 'I need the Decatur House to be the prestigious home it once was. It's not a museum anymore,'" she recalls. "I knew what to do. I know what is right in a home like this."

Watkins was well versed in the house's history, which includes its purchase by General Edward Fitzgerald Beale in 1871. Under his hand, significant changes were made to both the interior and exterior. Sandstone lintels were added to the front door, and new first-floor windows gave the façade a Victorian flair, as did decorative embellishments inside. In 1844, under Thomas T. Waterman's ownership, the house was simultaneously restored to its original state and made uniquely his own with a series of changes that included cutting the first-floor windows down by 15 inches. Suffice it to say, by the time the National Trust for Historic Preservation acquired the property in 1956, it was a storied structure—one whose saga was not yet over.

According to Michael Franck, principal of Franck & Lohsen Architects, "Prior to Stewart McLaurin coming to the Association in 2014, the Decatur House had been practically denuded of all historic artifacts and furnishings. It had become a banal box—all of the nice things were removed, and it didn't have any historic character left." McLaurin concurs, saying, "These rooms were a blank canvas. The White House Historical Association board of directors was enthusiastic to create a space that would bring to life the history of the home and become a functional area in support of our mission." McLaurin was relying on Watkins to bring back the home's character. The scope of her work included the front foyer, two parlors, the back entry, the stairwell, and the second-floor landing. She was given nine weeks to complete the restoration.

The project's purview was primarily cosmetic, as the structure itself was deemed sound, though beneath the Wilton rug in the entry hall, they found floor boards in need of repair. That work was done using boards from the attic floor. Watkins explains: "We made the decision that the original 1820s flooring would not be able to withstand human traffic, and the National Trust for Historic Preservation gave us permission to cover it with a soft cork to keep it preserved. Floor boards from the 1870s—when the Beales redid the floors—were found in the attic; they were in extremely poor condition but they were numbered. Each piece was completely restored using preservation-quality products and processes such as hot wax filler and very gentle brushes. Most of this work was done by hand. There were three types of wood used in the herringbone-pattern drawings that I found, which were used to re-create the floor with all of the boards in their original location."

They also fixed cracks in the plaster walls and reworked the HVAC system, which was hidden within the fireplaces. Additionally, they changed the face of the chimneys and the white marble hearth stone and quarter-inch surround, which was not original. "Nothing about the fireplaces was precious except for the mantels," Watkins says, adding that they painted the fireplaces black to enhance the mantel work. Notably, a chair rail was almost added. "We wanted to save the plaster walls from being pounded by art exhibits being hung," Watkins explains. "There was no molding to reference outside of one period, so we designed a profile that the National Trust approved, but it just didn't work visually."

The pith of Watkins's work was to create period ambience. "My goal was to make it the Decaturs' home," she explains. To do so, she searched the furnishings that had been locked away in storage and the artifacts held in the Decatur House vault. "I was looking for items that had belonged to Stephen and Susan Decatur but there was so little left because she had to leave the house and sell her belongings after he was killed in a gentlemen's duel. Most things went to auction. I took everything that would visually work, as well as what was theirs, including his prize awards for his bravery in battle—those needed to be on display. The intent was to re-create a semblance of what their home might have looked like—and the essence of who they were in their home." The collection held a lot of broken furniture as well as many pieces from the Truman era, which wouldn't have been period-appropriate. Thus, it was necessary to have reproductions made. The entire dining room set, for example, was designed and built by a New Hampshire-based artisan whose talent is perhaps most evident in the cabinet housing White House china.

Watkins estimates that roughly 90 percent of the antique furnishings and artifacts she selected are strictly ornamental. She did, however, still need to plan for how the house would function. "Stewart sees the Decatur House, not as a space to rent to organizations but as the parlors of the White House Historical Association," Franck says. With that in mind, Watkins ensured that the replica pieces as well as the refurbished and reupholstered furnishings were structurally stable to accommodate visitors. Likewise, the furnishings selected from the Beale family collection were rebuilt and reupholstered by a workshop in Maryland. The house is a mix of artifacts and history as well as furniture and surfaces that need to hold up to contemporary usage," she notes. "That was a very strong consideration in terms of what to select from the old family collection."

Notable objects from the house vault include the eagle mirror, the Decatur sword, battle memorabilia, and Stephen Decatur's desk from the USS *United States*. "The restoration allows us to showcase items from the Decatur collection as well as the Beale family going back to 1819," says McLaurin. "We intentionally did not choose to interpret a specific period of time, but rather blended characteristics of periods so these two families of distinction could be highlighted in a meaningful way."

Watkins worked with historic lighting specialist Paul Bavis from Spurgeon-Lewis Antiques to source appropriate fixtures, and Scalamandré fabrics were imported from France for the new

FROM LEFT View of drawing room and dining parlors facing west with window into courtyard. South window was previous entrance into a Conservatory.

Front door entry facing Lafayette Square.

Stewart McLaurin and Susan Watkins at the John Russell Pope Awards outside the Carnegie Institute.

BELOW Dining parlor facing west onto courtyard with antique reproduction furniture in Tiger Maple custom made in New Hampshire.

upholstery. The company was chosen as a nod to Jacqueline Kennedy's relationship with that family. The selected patterns, materials—cotton, linen, silk, and viscose—and colors were based on those that would have been available in the 1820s. Thought was also given to Mrs. Decatur's French tastes.

Watkins notes the arrangement of the furnishings and decorative elements saying, "The simple placement of his desk, of the sofas, of the chairs—the parlors don't tell you anything else but to do that." Of the parlor rooms, McLaurin says: "They are intended to be a complement to the President's guest house, Blair House, situated on the southern corner of the same block where Decatur House is located. Both entities are important assets for supporting and telling the stories of White House present and White House past."

In recognition of their work on the Decatur House, Franck & Lohsen Architects received the 2019 John Russell Pope Award for Historic Preservation. "The house represents classical architecture as a living tradition," says Franck. "It now comfortably houses artifacts like Admiral Decatur's sword and other historical elements and pieces, which give the house more meaning. And now that they are out of storage and back in the house, those elements have more meaning, too. Having them on the walls, on the mantels, as part of the house gives the house and the items context." And, bestowing credit where it is due, he concludes: "Stewart and Susan brought the soul back into the house. It's now the kind of house that represents the way people used to live. It's a reawakening."

KEY SUPPLIERS

ART INSTALLATION
Artex Fine Arts Services

CLEANING, ARCHIVAL PREPARATION
Ayoub Rug and Carpet Care

MILLWORK Champion Bros. Inc

PLASTER REPAIR DL Boyd

ANTIQUE REPRODUCTION FURNITURE DR Dimes & Co Ltd

PAINT SUPPLIER
Farrow & Ball Paints

PAINTERS GM Painting

REWIRING, ELECTRIC INSTALL
J. Leo Electric

UPHOLSTERY, DRAPERIES
J&C Interiors

HVAC DOOR, CUSTOM METAL GRILLES Kees Inc.

DRAPERY INSTALL
Knightsbridge Interiors

LANDLORD, PRESERVATION PERMISSIONS
National Trust for Historic Preservation

CONTRACTOR
Promacs LLC

MARBLE, STONE WORK
R. Bratti Associates

STERLING SERVICE
Rocky's Silver & Gold Emporium

FABRIC SUPPLIER
Scalamandré Fabrics

TWO ANTIQUE SIDE CHAIRS
Silla Ltd Fine Antiques

LIGHTING, ANTIQUE FURNITURE
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Buried by Vesuvius: TREASURES FROM THE VILLA DEI PAPIRI

At the Getty Villa through October 28, 2019

BY ERICA FIRPO

DRUNKEN SATYR (pre-conservation)
Roman, first century BC–first century AD
Bronze, copper, tin, and bone, H: 137 cm, L: 179 cm
Found at the west end of the rectangular peristyle, B on Weber's plan, July 10, 1754
Museo Archeologico Nazionale, Naples, 5628
VEX.2019.1.6
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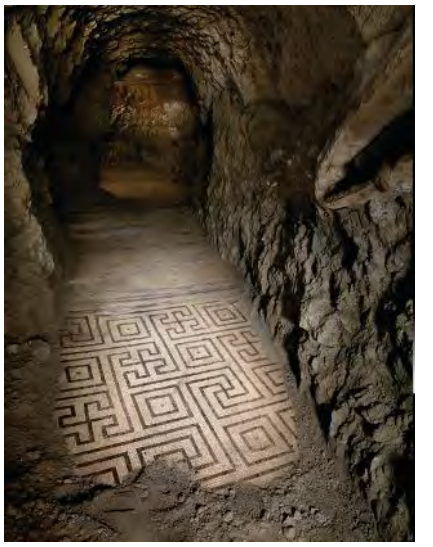


ABOVE Parco Archeologico di Ercolano Mosaic floor with complex meander in room o, Roman, first century BC, in situ *© Archivio dell'arte - Pedicini Photographers*

LEFT & BELOW, LEFT The Drunken Satyr undergoes conservation work at the Getty Villa.

BELOW Museo Archeologico Virtuale di Ercolano; Digital reconstruction of the Villa dei Papiri from the southeast

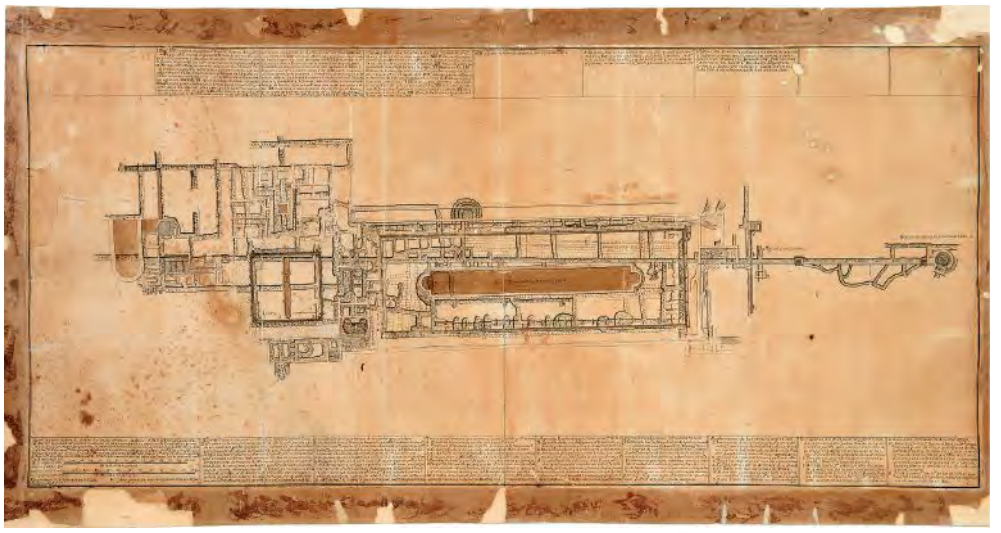
In AD 79, a river of hot mud and volcanic debris, the fallout from the eruption of Vesuvius, flooded the seaside town of Herculaneum covering it up for nearly two millennia until its rediscovery in the mid-1700s. Those excavations unearthed long lost treasures, meanwhile Swiss architect and engineer Karl Jakob Weber documented the still-buried Villa dei Papiri, named for the carbonized papyrus scrolls discovered on site in 1752. Weber's diagrams have been integral in the excavations that followed over the centuries, and they were the inspiration to J. Paul Getty who decided to replicate the villa in Malibu, creating one of Southern California's most iconic buildings—the Getty Villa. 45 years later, the Getty Villa is bringing some of the most extraordinary pieces from the Villa dei Papiri to the Mailbu bluffs in the exhibition "Buried by Vesuvius: Treasures from the Villa dei Papiri".

"Buried by Vesuvius doesn't set out to tell the original story of the [Getty] Villa. The idea is obvious—bringing the Villa dei Papiri to the Getty Villa," says curator Kenneth Lapatin. More than 70 artefacts and objects hand-selected by teams from Italy's Museo Archaeologico di Napoli, the Biblioteca Nazionale di Napoli, and Parco Archeologico di Ercolano were loaned to the Getty for an exhibition that was more than a dozen years in the making.

"We are bringing spectacular finds from Papiri to the Villa—statues, frescoes, ivories, papyrus scrolls, marbles—many of these finds have never traveled outside of Naples, nor have been shown before," shares Lapatin. "Each object was selected with our Italian colleagues, so even for long-time visitors to the Getty this will be something new."

While visitors might be familiar with the copy of the Drunken Satyr who lounges in the Getty garden, the original bronze Satyr statue, exhibition centerpiece, is entirely new...to the Getty Villa. The precious statue was all for lost until it was uncovered in the 1750s and in a dubious state. Distinctly damaged by the eruptions, the Satyr had to be pieced together, which included placement on a marble pedestal for its 1754 restoration. Fast forward to 2019, the Getty Villa shared a nail-biting fait accompli on its Instagram profile *@GettyVilla*, when it documented separating the marble base from the statue for the first time in 250 years.

The show is more than just the Satyr. The exhibition showcases spectacular, never-before-seen treasures including the bronze Runners and the marble Athen



EXCAVATION PLAN OF THE VILLA DEI PAPIRI (left)
1754–58
Karl Jacob Weber (Swiss, 1712–1764)
Vellum, ink, gouache, and pencil, H: 58.5 cm. W: 123.5 cm
Museo Archeologico Nazionale, Naples
VEX.2019.1.1
Image: Giorgio Albano

EPICURUS (right)
Roman, first century BC–first century AD
Bronze, H: 20 cm
Found north of the tablinum, in room 8 on Weber's plan, November 3, 1753
Museo Archeologico Nazionale, Naples, 5465
VEX.2019.1.26
Image: Giorgio Albano

THE NORTHERNMOST ROOM OF THE FIRST LOWER LEVEL (BASIS VILLAE) (far right)
of the Villa dei Papiri, re-excavated in 2007-8, revealed splendid frescoes and stucco decorations, which were being restored when the eruption struck in AD 79
Ministero dei Beni e della Attivita Culturali - Parco Archeologico di Ercolano.
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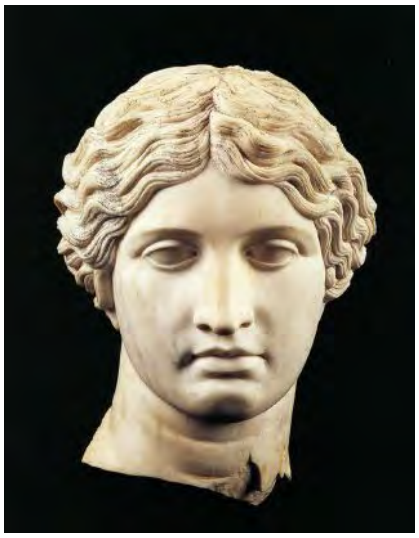
Image: Giorgio Albano



AMAZON (left)
Roman, first century AD
Marble with pigment, H: 34 cm
Found in the seaside pavilion, April 28, 1997
Parco Archeologico di Ercolano, 4296/80499
VEX.2019.1.52
Image: Ministero dei Beni e delle Attività Culturali – Parco di Ercolano.
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DETAIL OF COFFERED CEILING WITH ARMS AND ARMOR IN RELIEF (right)
Roman, first century BC. Northernmost room of the first lower level (basis villae).
Stucco. In situ Ministero dei Beni e delle Attivita Culturali - Parco Archeologico di Ercolano.
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Promachos. A bronze portrait of Piso Pontifex, the supposed son of owner Lucius Calpurnius Piso Caesoninus, who also just happened to Julius Caesar's father-in-law is also on view. Along with statuary, frescoes, and mosaics, the show explores (and attempts to read) papyrus scrolls recovered from the Villa dei Papiri in the 1750s which discuss philosophical subjects of Epicurean inspiration, and are remnants of the only surviving library from the classical world. Back drop to the lineup of "new originals" is the the Villa's antiquities collection itself, framing Buried by Vesuvius in a unique context—inspiration meets original.

"It's quite extraordinary to witness this International collaboration, going way beyond institutional loans," comments archaeologist Darius Arya. "The careful selection and painstaking conservation work underlines all of the institutions' commitment to preserving the past and sharing that important work with video and virtual reconstructions, all within the grounds of a museum, fully decorated and landscaped, inspired by the original villa."

Buried By Vesuvius also celebrates Herculaneum's incredible history of archaeological research. The two centuries following the rediscovery of Herculaneum were plagued by decades of abandonment and intermittent years of interest. In 1806, the French commanded excavations, leaving in 1815, followed by a brief 1823 excavation. Following the Italian unification, excavations resumed in 1869 until full stop in 1875. The early 20th century saw short excavations through the oughts, with long-term excavations from 1927 to 1958. New campaigns returned in 1960s, and would carry on to the turn of the 21st century with major excavations in the 1990s and 2000s. These excavations are showcased with original diagrams, plans and books. Rounding out the exhibition is a short film that renders the Villa dei Papiri in its pre-Vesuvius splendor, created specifically by MAV, Herculaneum's Virtual Archaeology Museum.

"What we are trying to do is treat the site holistically and trying to bring artefacts, archaeology, rediscovery and architecture all together. We wanted to represent the earliest excavation to most recent finds from 2007," underlines Lapatin.

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PROJECT Asheville High School
ARCHITECT PFA Architects

MAKING THE GRADE

PFA Architects restores an iconic southern high school to impeccable standards.

BY NANCY A. RUHLING | PHOTOS BY TZU CHEN PHOTOGRAPHY

The exterior of the main building of Asheville High School was restored by PFA Architects. The main building is one of seven structures on campus that were erected between 1929 and 2003.

KEY SUPPLIERS

ARCHITECT
PFA Architects

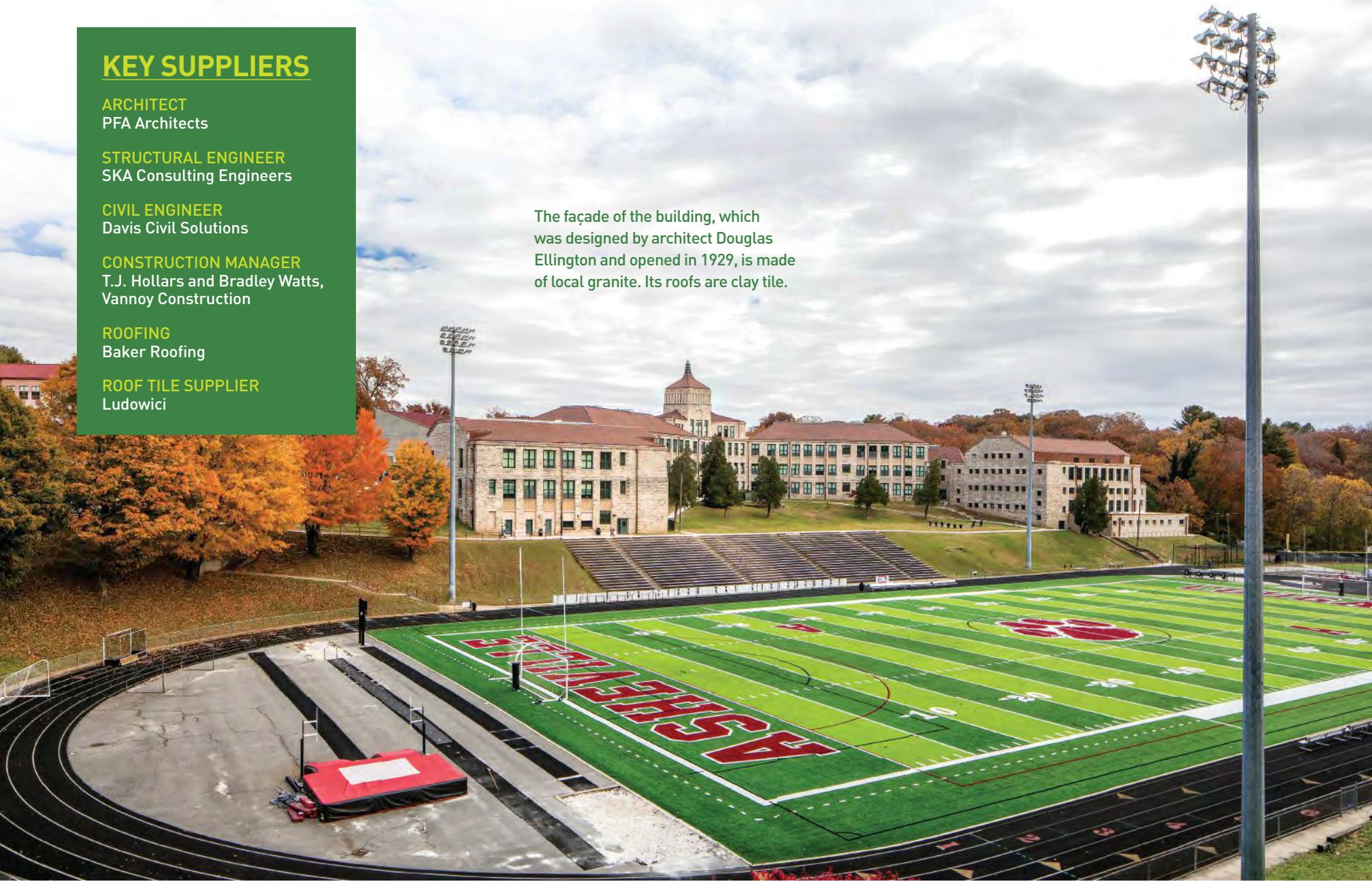
STRUCTURAL ENGINEER
SKA Consulting Engineers

CIVIL ENGINEER
Davis Civil Solutions

CONSTRUCTION MANAGER
T.J. Hollars and Bradley Watts, Vannoy Construction

ROOFING
Baker Roofing

ROOF TILE SUPPLIER
Ludowici



The façade of the building, which was designed by architect Douglas Ellington and opened in 1929, is made of local granite. Its roofs are clay tile.

For nearly a century, Asheville High School's historic main building has stood as a stoic monument to public education in the North Carolina city known as the "Paris of the South." The National Register building, which opened in Asheville in 1929 and features an arched entranceway and a soaring central rotunda, was designed by architect Douglas Ellington, whose other trademark Beaux-Arts and Art Deco structures, including the City Hall and the Biltmore Hospital, still define the skyline of the southern city in the Blue Ridge Mountains.

"The school's main building is an iconic one in the city," says architect Chip Howell, AIA LEED AP NCARB, of PFA Architects, which won the $27 million bid to restore the campus's seven buildings, which were erected between 1929 and 2003 and total 291,122 square feet. "Many of the people in the city, including myself, are Asheville High School graduates and the building's used for a lot of community activities, so the public is very familiar with it."

It's also very visible. "It has a presence in the street," he says. "It's right on your route from our downtown to the historic Biltmore Estate, which typically gets some 1.4 million visitors a year."

Aside from minor repairs and patches, the local-granite veneer exterior façade and tiled roofs of the main building, whose three wings radiate like the blades of an airplane propeller, remained virtually unchanged for more than eight decades. "The whole campus needed a ton of work," Howell says, adding that although it's a city school, the Buncombe County government financed the project. "We were given a master shopping list and asked to determine priorities. Restoring the exteriors of all the buildings on campus was the top one, of which the main building was a significant expenditure."

On the main building, PFA Architects, specialists in the design of health care, educational, and commercial buildings, made major repairs that included replacing the copper gutters and roof tiles and restoring the masonry.

"Although it was not mandated by the funding, which was public money, we solicited input from the Historic Resources Commission because this is such an important building in the community, Howell says. "The county leadership understood why we were doing this."

The masonry work, which took two and a half years, included replacing the window lintels and resetting and repointing the mortar throughout. "This was a challenge on two fronts," Howell says. "We worked year-round, even in the winter, when we had to heat the scaffolding environment, mortar, and stone to the correct temperature. And the school, which has 2,400 students, was occupied; we were doing overhead work, so safety was an issue."

Howell says Vannoy Construction, the construction manager, was integral to the success of the project. "Their team did an incredible job maintaining safety, cleanliness, and communication with the school while tackling a matrix of complexities inherent to the construction," he says. "We were very impressed with the execution of the project and the attention to detail in the finished product."

To get an accurate sample of the mortar color, which had been weathered by decades of Asheville's solid four-season climate, the team extracted chip samples from several places. For the roof work, Howell and the other members of the team, including PFA Principal Scott T. Donald, AIA and architect Laura Hudson, who is also an Asheville High School

Tiles on the roof, which are in three colors, are from Ludowici, the original provider.

alumna, consulted with Tom Williams, a retired art history teacher at the school who helps lead the alumni association and shares a passion for architecture and preservation.

They tracked down the original tile manufacturer, Ludowici, a 131-year-old company in New Lexington, Ohio, that also had supplied tiles for other iconic Asheville buildings, including All Souls Church, Grove Park Inn, First Baptist Church, and City Hall. Alicia Cordle, a Ludowici ceramic engineer and design coordinator, says that the challenge "was to mimic history in a way that was authentic by using a modern process. We had to try to make the tiles look old but not too old."

After the PFA team sent photos and tile samples, the color scheme—red, orange, and brown—was selected. "There was a range within each color because everything had to be blended perfectly on-site, so we had to make sure we gave them the right percentages of different tiles," she says. "To make the tiles look more historically accurate, we added a green tone to the brown. It's an unconventional choice we needed to make in this case to get the best match, and we glazed the red and orange tiles with an ebony mist."

She credits Baker Roofing, which Ludowici has worked with on many restoration projects, with creating the perfect color blend in the tile layouts. Selecting a historically appropriate tile style for the 50,000-square-foot roof proved more problematic.

"We laid out different colors and styles on the roof, then we made several 6-foot-by-6-foot mockups and attached them to the roof so we could stand on the street and look at them from a distance to see what the public sees," Howell says. "We knew that once we made a decision, there would be no turning back, and everybody and their brother would let us know if we got it wrong."

The PFA team's original choice was a modern version of the 1920s tile that was on the roof that had larger dimensions. "Everyone agreed that it just didn't look right," Cordle says. "But they were determined to get it right. I was so thankful for their commitment because I knew we could do better with an alternative standard product from a different product family."

She suggested Ludowici's Provincial, a 7-inch-by-5-inch terracotta tile that fit the project's tight budget. "Once everyone saw the Provincial mockups in place, we knew we had nailed it," she says, adding that the restoration was named Ludowici's 2018 Project of the Year.

The tiles, which were made with an extruded die, were cut, sand-blasted as part of the aging process, then hand-sprayed with a colored glaze.

Howell sees the restoration of the main building as a tribute not only to Ellington but also to all the high school alumni who call Asheville home. "People have a real affinity for this building," he says. "It's in the center of the city, and it's also a cornerstone at the heart of our community." He adds that the new-old look has been well received. "I hope it generates momentum to do more campus work," he says.

Time, he says, will be the true test of the restoration. "When we were working on it, we used to joke that the ironic thing about the project is that if we do a good job, nobody will know we were here. And that turned out to be true."

Howell is looking forward to watching the main building age gracefully into its restoration. "Copper looks better when it's weathered for five to 10 years," he says. "We're eager to see the next chapter of evolution."

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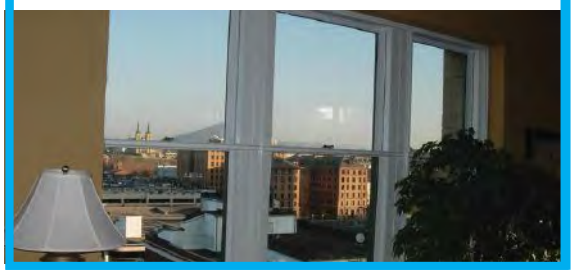

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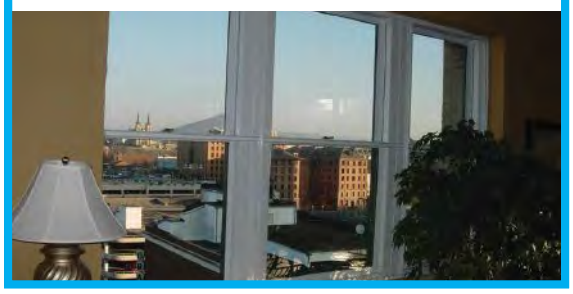

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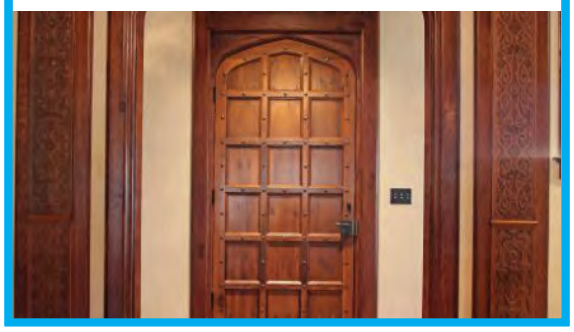

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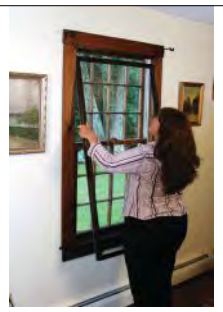

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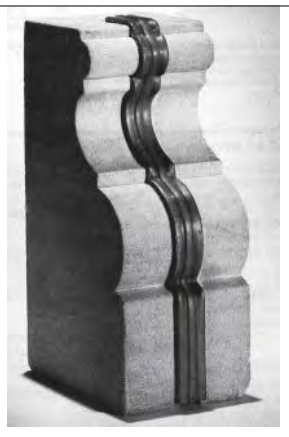

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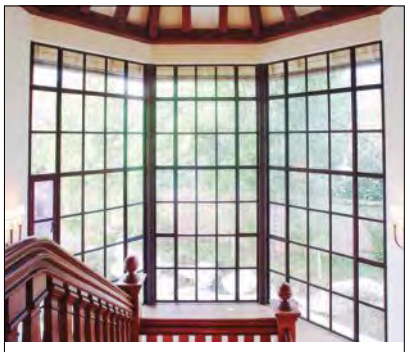

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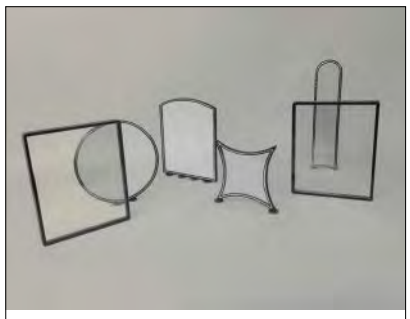

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Manufacturer of custom-designed windows & doors: handcrafted, hot-rolled, solid-steel & solid-bronze window & door systems.

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KOLBE WINDOWS & DOORS
800-955-8177; Fax: 715-845-8270
www.kolbewindows.com
Wausau, WI 54401
Manufacturer of windows & doors: traditional details; extruded aluminum-clad, roll-formed aluminum-clad, wood & vinyl energy-efficient windows & doors; fiberglass doors.

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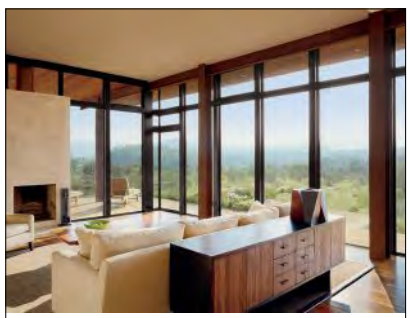

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Manufacturer of custom architectural windows & doors: glass, timber & hardware; garage doors; French doors; residential, commercial & historical/ landmark projects; since 1921.

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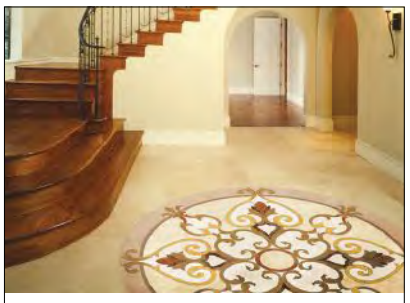

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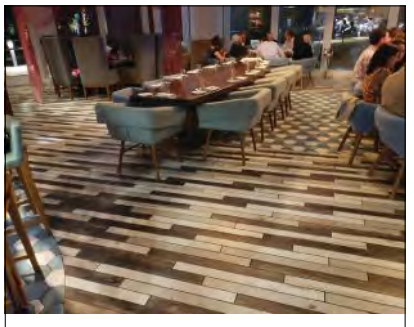

KOYDOL, INC.

202-449-9525; Fax: 202-449-3847
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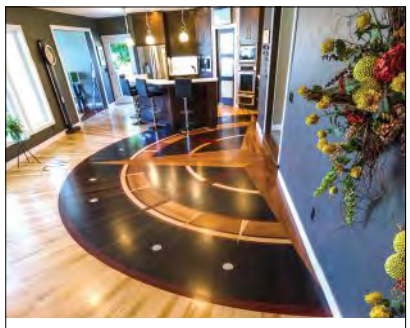

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www.oshkoshdesigns.com
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PARQUET BY DIAN
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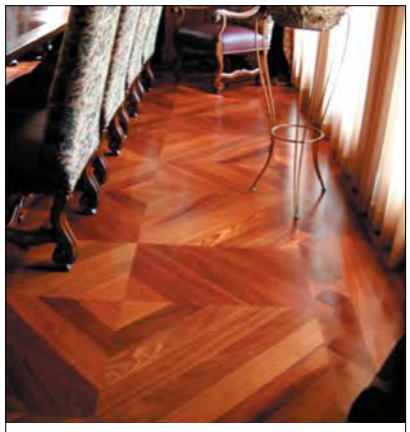
Manufactures custom parquet flooring: solid, unfinished, straight-edged; over 20 original designs; 7/16-in. or custom thicknesses; PBD & LEED credits.



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678-702-5200
www.francoisandco.com
Atlanta, GA 30318
Founded in 1997 by Thierry Francois, projects/products include fireplace mantels, range hoods, architectural elements, surfaces, cut stone, limestone, marble, scagliola, wood flooring, mosaics, fountains, terra cotta, DeCorbusier metal surfaces.

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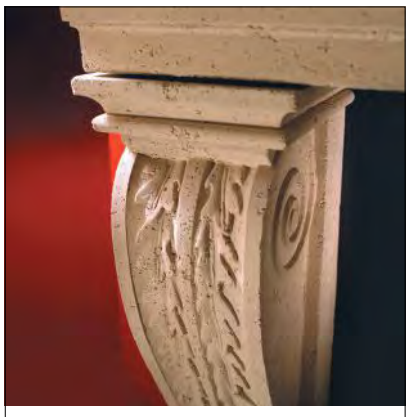

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Fax: 913-563-4944
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Saturday, September 21, 10:00 AM - 3:00 PM
Instructor: Joscelyn Godwin

Theory of Proportion
Saturday, October 5, 9:30 AM - 4:30 PM
Instructor: Steve Bass

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Tuesday, October 15, 6:00 PM - 7:30 PM
Wednesday, October 16, 6:00 PM - 7:30 PM
Instructor: Leonard Porter

The Architecture of the Theater
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www.beachsidelighting.com
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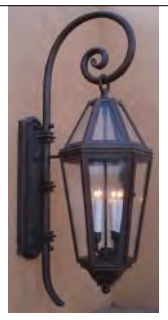

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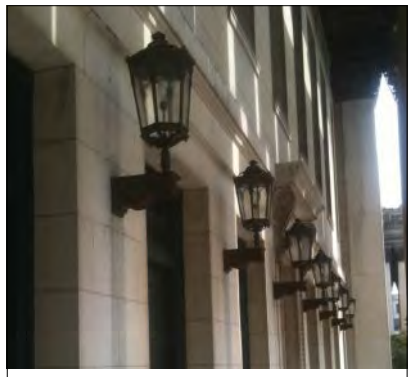

GRAND LIGHT
800-922-1469; Fax: 203-828-6307
www.grandlight.com
Seymour, CT 06483
Restorer of historic lighting fixtures & manufacturer of custom lighting fixtures: metal fabrication, glass fabrication, metal finishing, polishing, painting, welding, abrasive blasting; historical replication & reproduction.
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www.hmwpa.com
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www.historicalarts.com
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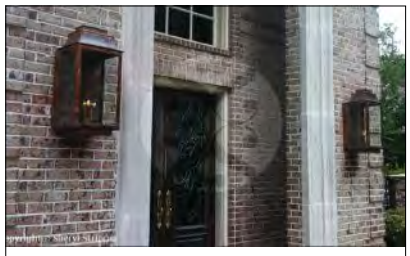

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www.slalco.com
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STEVEN HANDELMAN STUDIOS
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www.stevenhandelmanstudios.com
Santa Barbara, CA 93103
Manufacturer of hand-forged traditional lighting, grilles & fireplace accessories: many types & styles of lighting & grilles; fireplace screens, grates & inserts; historic reproduction & restoration services.
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VINTAGE HARDWARE & LIGHTING
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www.vintagehardware.com
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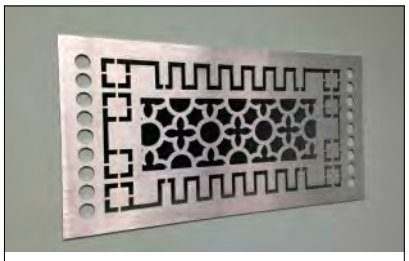

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www.aagrilles.com
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ARCHITECTURAL GRILLE

800-387-6267; Fax: 718-832-1390
www.archgrille.com
Brooklyn, NY 11215

Manufacturer of custom grilles: perforated & linear bar grilles; radiator covers; aluminum, brass, steel & stainless steel; variety of finishes; stock sizes; water-jet & laser cutting.

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HERITAGE METALWORKS

610-518-3999; Fax: 610-518-7264
www.hmwpa.com
Downingtown, PA 19335

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800-225-1414; Fax: 801-280-2493
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Designer & custom fabricator of ornamental metalwork: doors, windows, hardware, stairs, balustrades, registers, fences, lighting, gutters, columns, weathervanes, snow guards, cupolas, planters, fireplace tools & more; iron, bronze, aluminum & steel; restoration services.

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Manufacturer of registers: metal, wood & stone; many historic styles; accessories.
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BY SUSAN D. TURNER

Nip & Tuck

IN THE APRIL 2019 ISSUE OF THIS MAGAZINE, "How to Repoint Masonry," used the Chicago definition of tuckpointing: "placement of mortar in the joint without the removal of mortar." Referencing the article, "Tuck Pointing History and Confusion" confirms the existence of a Chicago method using that term, but clarifies the original English definition and method of tuckpointing as discussed in this article.

WHAT IS TUCKPOINTING?

Sixteenth-century brickwork in England had wide mortar joints to compensate for irregularly shaped bricks. Following the Great Fire of London in 1660, building materials such as good facing bricks were hard to come by. Until the 17th century, when uniformly sized bricks from Holland became available, and Christopher Wren and other significant architects promoted narrow joints, tuckpointing's traditional definition meant a narrow contrasting band over a background colored mortar. Originally called "tuck and pat," it evolved to "tuck and point jointing," and later to just "tuckpointing." The technique made the assembled masonry appear to have better quality masonry units when viewed at a distance. Embraced by the middle class, the method was not typically used on royal homes or other important buildings. Along with brick-staining, it was notably used in 1732 on Number 10 Downing Street, the home of the British Prime Minister, in order to unify three row houses into one address.

To tuckpoint masonry, mortar for filling the joint is selected in a similar color to the brick or stone to make it appear monolithic. Sometimes the brick itself is stained to achieve the most consistent appearance. Once the base mortar is slightly set, a v-shaped mason's tool is used to inscribe a straight groove into the damp mortar to provide a narrow, regularized line between the bricks or stones. Into this groove, contrasting mortar is placed at a raised profile. This technique results in a strongly defined mortar joint and implies that a much more regular (higher quality) brick or stone was used. The Smith and Coleman Houses in Toronto, Canada, had the original tuckpointing restored to the way it was applied in 1885.

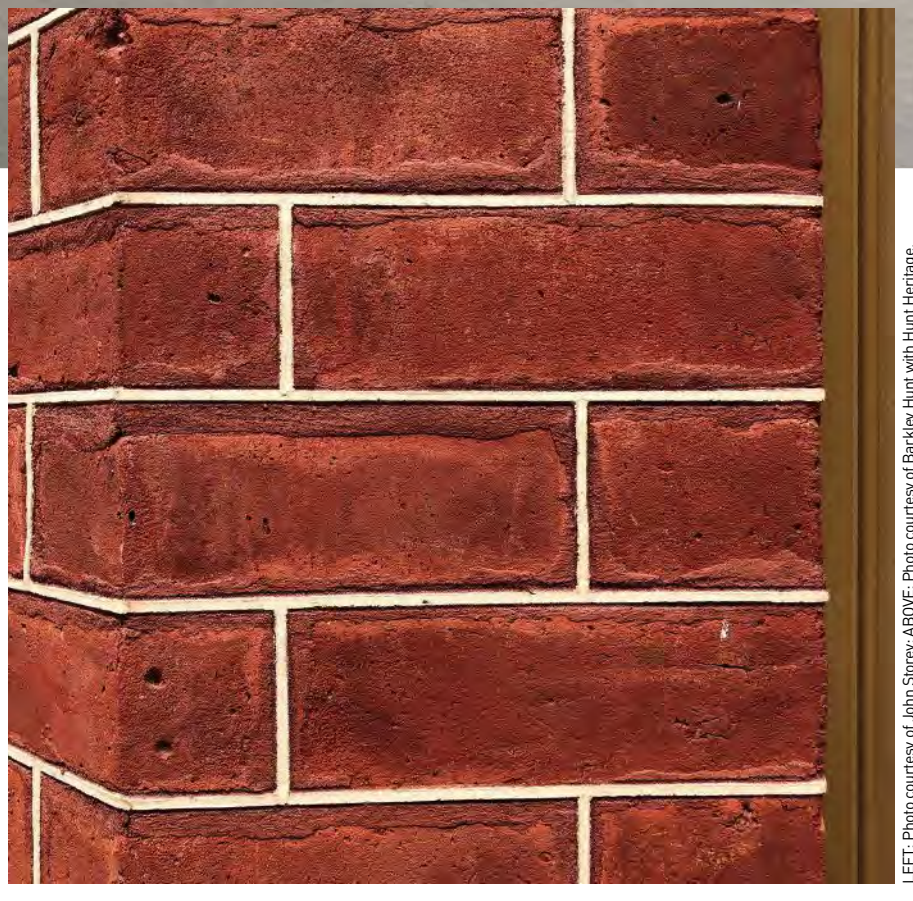
With the Great Chicago fire of 1871, the masonry trades were stretched thin re-creating in non-combustible construction all the buildings that were lost. The Chicago method of pointing evolved as a simpler, faster technique, employing a single color of mortar with a raised ridge placed along the center as the final tooling. This method should not be confused with the traditional technique of tuckpointing, or the Irish form of it, known as "wigging." Wigging points the joint with the mortar color of the raised band. Once set, a colored stopping mortar is applied adjacent to it. The difference between the two is in longevity. In tuckpointing, the ribbon will weather first, leaving the brick-colored mortar joint. In wigging, the stopping mortar will weather first leaving the contrasting ribbon color.

REFERENCE:

"Tuck Pointing History and Confusion" by Michael Shellenbarger APT Bulletin: The Journal of Preservation Technology Vol. 23, No. 3 (1991), pp. 38-47.

www.theglobeandmail.com/real-estate/toronto/the-lost-art-of-tuckpointing-reborn-intoronto/article37802073/

http://dublincivictrust.ie/articles/to-wig-or-not-to-wig-



LEFT: Photo courtesy of John Storey; ABOVE: Photo courtesy of Barkley Hunt with Hunt Heritage.

TOP The Smith-Coleman Houses, 1885, with the repointing fully restored.

ABOVE Tuckpointing detail of Smith Coleman House.

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