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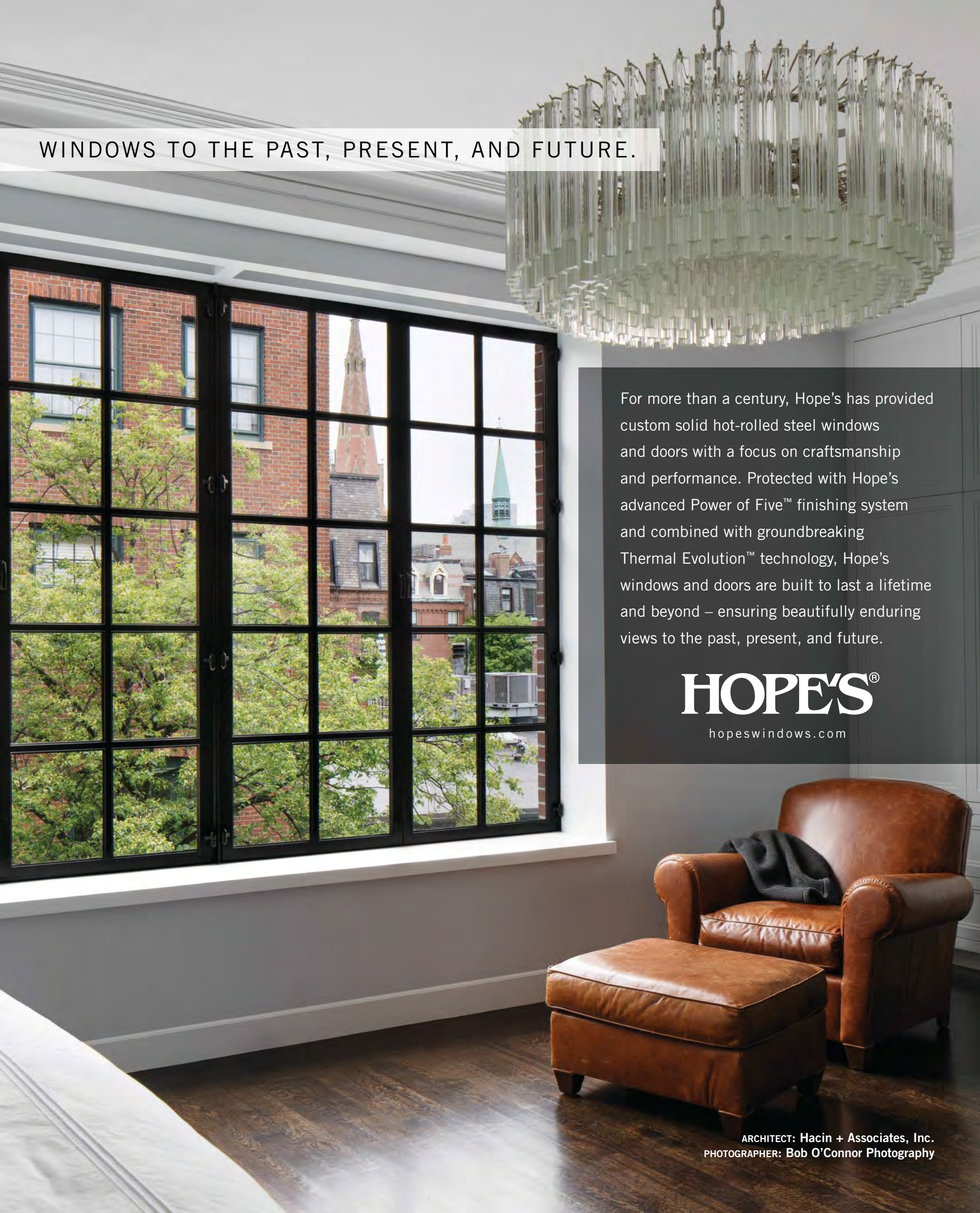


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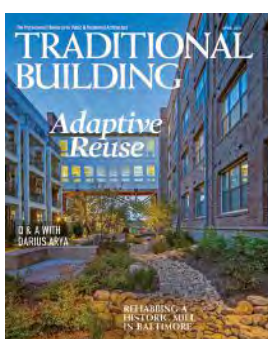
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Metals are essential to architecture—however, they can be intimidating to source. Fortunately, we can look to manufacturers and suppliers for expertise.

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Reviewed by Clem Labine



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Historical Concepts creates luxury living from historical mills.

See more on page 42.

Photo by Jim Graziano

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APTI + TRADITIONAL BUILDING

The Association of Preservation Technology International (APTI) is a member organization whose mission is to “advance appropriate traditional and new technologies to care for, protect, and promote the longevity of the built environment and to cultivate the exchange of knowledge throughout the international community.”

Founded in 1968, APTI serves preservation architects, contractors, tradespeople, engineers, facility managers, conservationists, and consultants with an annual conference, the APT Bulletin, an e-newsletter, and a web-based tool called the “Online Sustainable Conservation Assistance Resource,” which provides advice and best practice insight on how to balance preservation objectives with sustainability goals.

APTI also offers the “Building Technology Heritage Library” (seen in *TRADITIONAL BUILDING*’s February 2017 issue), a digital collection of historic trade catalogs.

This month, the APTI and *TRADITIONAL BUILDING* announce a formal collaboration to exchange information across their respective media portfolios. *TRADITIONAL BUILDING* magazine will join the family of APTI’s periodicals and digital media to serve all APTI members with a yearly subscription to *TRADITIONAL BUILDING* magazine.

In addition, *TRADITIONAL BUILDING* has pledged funding for a new emerging professional to be announced this month. For more information on the Association of Preservation Technology International, visit www.apti.org.

Meet the 2019 Palladio Award Jurors

Entries for the 2019 Palladio Awards were the highest to date. *TRADITIONAL BUILDING* curated a select panel of esteemed luminaries in the field of classical architecture and preservation. Judging took place in Boston in February and the winners will be celebrated July 16 at the Traditional Building Conference Series in Garrison, New York. Here are this year’s judges. For more on the judges and for a full list of winners, visit traditonalbuilding.com

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Photo by Ali Eminov

Mortar Workshop

“Rediscovering Traditional Mortar—The More Sustainable Solution” is a hands-on workshop for masons and other craftspersons responsible for repointing older and historic buildings.

The workshop will be led by Nigel Copsey, a stone mason-building conservator and Research Associate of the Department of Archaeology at the University of York (England).

The workshop will be held twice in Wayne, Nebraska, on **May 6 & 7** and on **May 8 & 9, 2019**.

The workshop is hosted by the Nebraska Masonry Alliance and is supported but the Wayne County Board of Commissioners, the Nebraska Department of Administrative Services—Task Force for Building Renewal, the Nebraska Association of County Officials and History Nebraska.

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INTERVIEW

INTERVIEWED BY ERICA FIRPO

Classical Archeologist

Darius Arya discovers the present by digging up the past.



DARIUS ARYA

ABOVE Darius on location at the Hagia Sofia, Istanbul Turkey while shooting PBS's *Ancient Invisible Cities*

RIGHT Inspecting Pharaoh Djoser, an epic limestone statue from the 3rd dynasty of Ancient Egypt, at the Egyptian Antiquities Museum in Cairo, Egypt. The statue is considered the oldest, life-size sculpture from Egyptian antiquity.



Photos courtesy of Darius Arya

There is nothing more new than looking at the past, or at least that's how Rome-based archaeologist Darius Arya thinks. For Darius, Rome is more than ancient history, it's living history and an ongoing story that Darius takes to the lecture halls, the field, and to the screens- big and small.

"Everyone dreamed of being Indiana Jones," tells Darius, "I figured I'd just do it. I wanted to be knee-deep in ancient inscriptions and underground sites, so I started with Latin." While studying Classical Studies at University of Pennsylvania, Darius was accepted to

participate in a semester in Rome at the Intercollegiate Center for Classical Studies, fondly known to alums and students at the Centro. While his focus was Greek and Latin, Darius was captivated by the active history all around him and continued on to a Masters and Masters/PhD in Classical Archaeology, at University of Texas Austin, and was awarded a Fulbright scholarship and fellowship at the American Academy in Rome.

What anchored and still anchors Darius to the Eternal City is the unique juxtaposition of past and present in its art, architecture, and culture. "I tend to

look at Rome from the past, like 2,500 years ago, and constantly see these threads in contemporary life here as well as around the world." His passion for Classical studies and architecture is unstoppable, and over the past two decades in Rome, he's done everything to share it. As the director of American Institute for Roman Culture, a non-profit that fosters conversation on Rome's extraordinary cultural legacy through education, outreach, and multi-platform storytelling, Darius created several education and new media initiatives, and as a documentary filmmaker, he hosts

2018's "Ancient Invisible Cities" (PBS) and ongoing Italian television series "Under Italy" (RAI5).

We sat down with Darius to find out what its like to live, work, and dig in Rome.

1 You've been coordinating excavations in Rome for 15 years. What are some of the surprises you've come across? What has been your most fulfilling project to date? No matter how much you plan and study, when you finally excavate you will inevitably find things you didn't expect, never dreamed of. I've come



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I believe it is possible to bridge the gap between innate enthusiasm for the material and the actual academic discipline by utilizing new media to keep the



ABOVE Social media, especially live streaming, takes an active role in education storytelling and promoting cultural heritage, according to Arya, who recently won a Shorty Award for his live streaming reportage. His goal is bring his audience live to cultural heritage sites around the world.

LEFT Testing the truth at Rome's Bocca della Verità (mouth of truth), an ancient manhole cover or fountain dating to the imperial age, and one of Rome's favorite selfie spots.

across an undocumented imperial era cemetery, and uncovered an intact opus sectile floor. My personal favorite and probably most fulfilling came from our dig at the Park of the Aqueducts, a public park less than eight miles from the center of Rome. The park itself is amazing with its mile-long arcade of ancient Aqua Claudia aqueduct. We were in our third summer at excavations, already having uncovered a 50,000 square foot lavish bath complex—multiple stories and chambers and lots of in situ marble paneling. We were halfway through the day, already unearthing beautiful statue fragments (clear signs of late antique spoliation) when we uncovered a colored marble head. As we progressed, we realized we had an entire intact statue of the highest quality—a second century AD red marble statue depicting Marsyas tied to a tree, with beautiful detailed musculature and one remaining bronze

inlaid eye. I was so paranoid when we found it, I decided to sleep in the trench with Marsyas that night for fear of looters (always a real threat for any excavation). We extracted the statue the next morning with a small crane and transported it to a superintendency warehouse for safekeeping. After a thorough restoration and cleaning, our Marsyas is on permanent public display at Capitoline Museums Montemartini gallery.

2 What are the biggest challenges?

Archaeology is slow work. And the thrill of a season in the field is matched by a long study season in the warehouse and in the library, with a lot of specialists and technicians. Many years in the field are overshadowed by countless more hours of study, research, and documentation. It is tedious and methodical—all totally worth it, but also requires a lot of

patience and funding. Maybe that's why Indiana Jones kept sneaking out of the university during office hours?

Challenges can be bureaucratic and also topographical. Rome has some of the most complex stratigraphy in the world due to the fact that it's been continuously occupied for over 3,000 years and thus so much was built and deposited on the same land by so many citizens, foreigners, pilgrims, governments, and empires.

Taking the larger view of the field of archaeology and heritage preservation as a whole, probably the biggest challenge today is not looting nor war, but accelerated urban development and growing need for arable land. Often archaeologists and heritage preservation experts are considered hindrances to progressive development, but they are essential stakeholders in preserving/documenting known and delineated

sites as well as those yet to be uncovered, and viable sources in collaborative development.

3 How do you navigate living in Rome, a contemporary city with nearly three thousand years of visible history and lot of baggage? Can one appreciate the history of the Eternal City and still enjoy its 21st century attributes and vice versa? With hundreds and hundreds of churches, monuments, and archaeological sites and museums, I'm never bored. Even after two decades of living in Rome every single day is a delight for me. There is always something to discover, explore, and rediscover, and my Rome experience flows into the palimpsest of the city. For example, my bus stop is at Largo Argentina, known for its cat sanctuary as well as the area sacra, an incredible open-air site with Republican temple abutted by the late

material dynamic—from social media like YouTube and Instagram Stories, to better, interactive tech.

— DARIUS ARYA



ABOVE Conservators capping an ancient wall at Arya's excavation at Parco dei Ravennati in Ostia Antica. The excavation involved the examination of tombs located along an ancient thoroughfare that flanked the Tiber river, as well as the discovery of a late antique house.

RIGHT An excavation is a collaborative team effort as history. Arya works side by side with trained specialists and experts in their field such as forensics anthropologist Pier Paolo Petroni (shown) who helps put the pieces of history together.



Republican Senate hall where Julius Caesar was assassinated. My local gelateria is down the street and our children get their school supplies at the cartoleria next door. It's a contemporary marketplace and probably the most historic bus stop in the world! My kids and I bike to school passing the best preserved temple in antiquity, the Pantheon, and then peddle past one of Rome's most modern museums, Richard Meier's Are Pacis Museum next to the 2000 year old Mausoleum of Augustus (currently under restoration, slated for a 2019 opening).

4 Are the upcoming generations interested in classical studies? How do you drive that interest? I'd say that the next gens are definitely interested in the classics but perhaps less conventionally. While less and less are majoring in Latin and Greek, they are absorbing

classical studies directly and indirectly through film and television series like *Gladiator*, *Game of Thrones*, *The Young Pope*, as well as fashion, gaming and especially travel. All of this confirms to me that the classics, that history, the art and architecture, those characters and stories, are ever inspiring. Taking that into consideration, the field as a whole (from languages to art and archaeology) is definitely shrinking needs to reboot-reinvent itself, for wider appeal, at the same time staying true to its core objectives and values. I believe it is possible to bridge the gap between innate enthusiasm for the material and the actual academic discipline by utilizing new media to keep the material dynamic—from social media like YouTube and Instagram Stories, to better, interactive tech.

5 You were one of the first archaeolo-

gists to have an active voice on social media, and you won an award for it (2017 Periscoper of the Year). Will you share with us why social media is so important to archaeology, classical studies and architecture? Visual storytelling, an essential component of social media, is integral to archaeologist and historians. It brings the audience directly to the material culture. I'm lucky to be in Rome, hands down one of the most photogenic cities in the world. From the first time I signed up, it made sense and was easy to share images and live streams from the ancient world via Twitter, Facebook, and Instagram. It's more than just a good photo—it's an opportunity to expand and share knowledge and insights, and interact directly with a global audience that has questions and wants to learn. My hashtags #recycledhistory (a focus on the continual evolution and reuse of

ancient materials) and #romeaway-fromrome (modern and contemporary architecture with classical architectonic elements from a Palladian home to 1920s theatre or Wall Street architecture) may not trend but they create new discussions and connections of the various facets of classical studies. The results of my efforts on social media really show that the classics, in all its rich, interdisciplinary fields, is alive and well in a contemporary setting. History, art, architecture, and the people of the past that created it all, are engaging protagonists on a variety of platforms (Twitter, Instagram, Periscope, Facebook). As those sites evolved and change, I've adapted as well, having just now launched a new podcast *Travel: In Situ*. Delivery and engagement is bound to continue to change and evolve, and I intend to stay with or ahead of the curve in the discussion.

Restorative Arts

The oldest restoration company in the United States, Trefler's has a long history of breathing new life into treasured heirlooms.



LEFT Artisan, Laura Sheehan, removes old gold leaf and glue from a frame before regilding it.

FAR RIGHT Restorer, Bernard Murphy, applies finish to a chair's splat, making sure the color mimics the original.

BELOW As part of Trefler's Corporate Restoration services, a craftsman mixes pigments to create a faux finish for a desk.

A well-made piece of furniture is a form of art. Yet, because furniture is also functional, at some point it may need to be restored. That antique armchair has scuffed, gouged legs. The cane on an heirloom sofa has punctured. Or, the veneer on a side table has buckled or fallen off. To bring these items back to their original luster, a company like Trefler's in Newton, Massachusetts, comes to the rescue.

"We are the oldest and largest full-service collective [of] restoration companies in the United States," says president David Manzi. "There are many furniture restoration companies that are larger than us, many decorative art restoration companies that are larger than us, upholsterers—but, collectively, we are the largest." In addition to

restoring furniture for individuals and families, Trefler's repairs and restores books, porcelain, china, glass, crystal, and metal decorative arts, along with fine arts. Trefler's works with corporate clients, such as Four Seasons and Harvard University, doing everything from refinishing a table to repairing a spindle on a chair. Trefler's does custom framing, custom upholstery, fine art packing, shipping, storing, and installation, and will professionally photograph items for archival or insurance purposes. They even work with the trade to provide architects and designers with custom furniture, finishes, and restoration.

The story of Trefler's dates back to 1921 when Abraham Trefler opened a shop to fix transit radios, knickknacks, and small pieces of furniture in his native country of Germany. His son, Eric,

who managed to survive the prison camps in Poland and Germany during World War II, eventually continued the business after moving to New York and then Boston, where he began restoring furniture for various antique dealers before going out on his own.

"Eric developed his own type of epoxy," says Manzi. "It was basically a combination of different bonding agents and it's a product we still use today." While much of Eric Trefler's early business centered around repairing crystal, china, porcelain, stone, and metal items, furniture became a dominant focus in the 1980's, mainly thanks to Leon Trefler, one of Eric's sons and brother to Alan Trefler (who now owns Trefler's with his wife Pam). Leon Trefler had the clever idea of connecting with insurance companies eventually po-

sitioning Trefler's as the go-to expert throughout New England for repairing furniture harmed in transit or afflicted with fire or water damage.

"Our conservators are just incredible," says Manzi. "They are considered art conservator technicians and have backgrounds in art history and other related fields. A lot of our woodworkers have gone to the North Bennet Street School" in Boston and some staff members have been with the company for 20-35 years.

"We also train 'The Trefler Way,'" continues Manzi. For example, "we don't do spray finishes. There are other companies that do that, but we only do hand-applied finishes. Some people may not like seeing the brushstrokes, but I think that's what separates us from our competitors. We don't 'dip and

strip’—we hand strip and sand because we think that by dipping a piece of furniture into a vat [of stripper], you can’t get rid of all the stripper, which will continue to compromise the structure and integrity of a piece. So, it does take a little longer and, of course, that makes the job more costly for the consumer, but I think it works for our customers and the piece.”

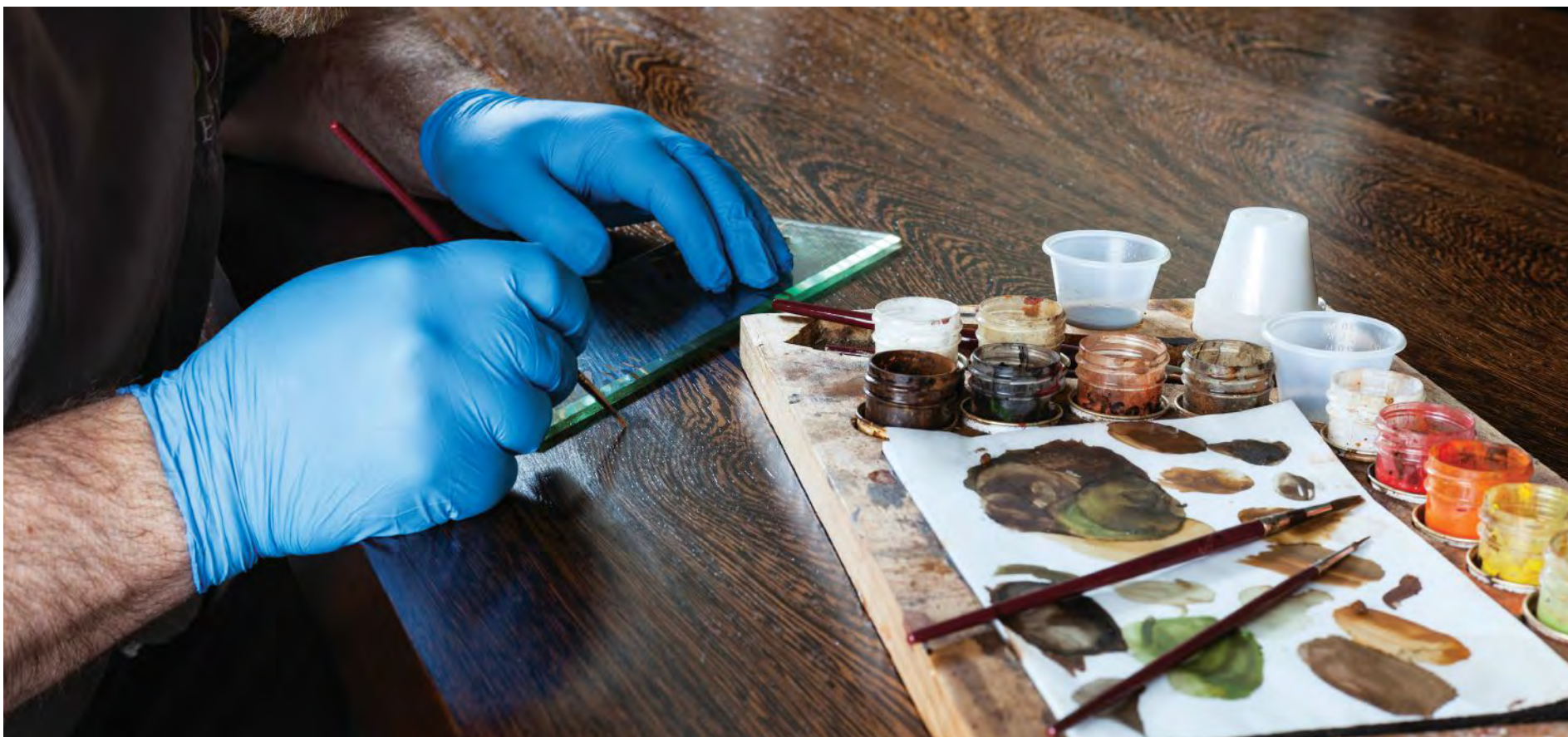
Peeking inside Treffler’s chalk-white workshops on a recent week-day morning reveals how much work goes into restoring a piece. Kody Kirkland, a professional photographer and Head Art Handler, who’s been at Treffler’s since 2017 after graduating from Massachusetts College of Art and Design in Boston, explains what he’s done to rejuvenate an Asian, black lacquer cabinet embellished with shiny gold figures, animals, and birds.

“It came in with areas that were raised and cracked or the lacquer had

come off,” says Kirkland. “It’s a private piece and the owner wanted it touched up and brought back to life.” Treffler’s offers a variety of restoration solutions at various price points, including stripping the piece down to the original wood and refinishing it or simply keeping the furniture’s old look, but making it functional. For the cabinet, Kirkland glued down loose parts and reattached a leg. Then, he’d filled in cracks and missing decorative areas with wood epoxy, sanding the epoxy down as close to the surrounding shiny black lacquer as possible without scratching it.

“I painted this,” he says pointing to a long-tailed bird with tiny black feather lines. “I recreated it by matching the style of another bird and the piece’s overall artistry.” Kirkland also refreshed the cabinet’s black lacquer background but with paint, not lacquer, to stay within budget.

“My photography experience helped



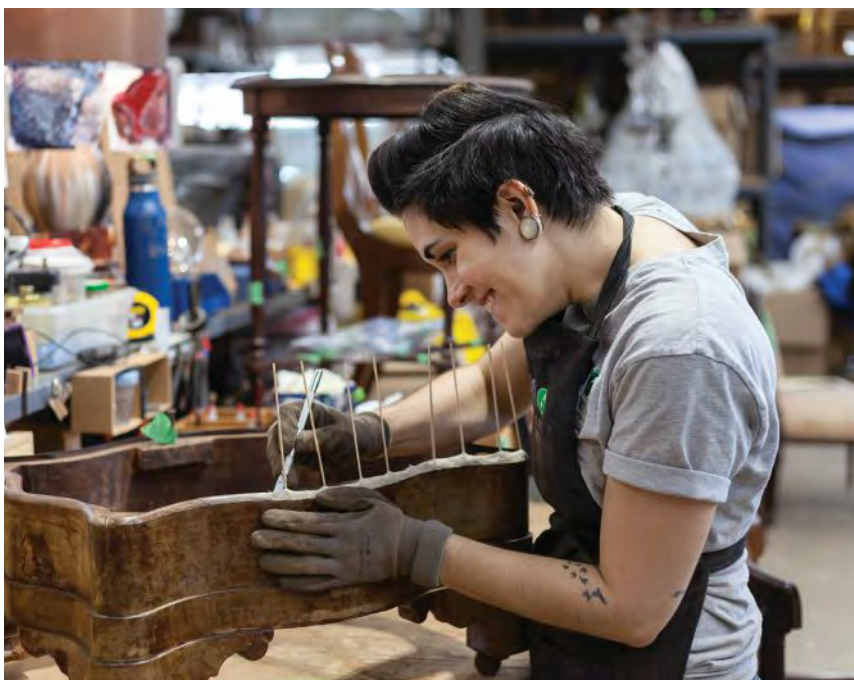
Photography courtesy of Treffler's



LEFT To refinish a chair, a restorer strips off the color and sands away imperfections.

MIDDLE Artisan, Meaghan McNalley, works with adhesive on a small marble-topped table before the top is fitted into place.

BELOW Craftsman, Sarah Robison, applies filler to the back of a plate in order to remove a chip.



me color match this piece,” Kirkland says, referring to the paint mixture. “It looks black, but it actually has an orange tinge.” According to Kirkland, he will restore the piece to the client’s agreed-upon quote, then show the piece to the client who will decide whether or not to continue restorations.

Nearby, Conservator Chris Keiffer works on a drop front secretary. With a background in carpentry, he joined Trefler’s 2014 as a delivery person, learning restoration skills from fellow conservators until he was promoted.

“This piece was really in rough shape [when it arrived],” says Keiffer, referring to the secretary. “The finish was old and uneven and the drawers wouldn’t close smoothly. Lots of veneer was missing and the drawer runner was broken.” So, Keiffer first tackled the structural issues, including recreating a new runner. He added new wood veneer to the larger veneer sections and for the smaller ones recreated veneer by carefully painting the epoxy and putty to match the original veneer.

“One side [of the piece] was facing the sun and had gotten faded,” continues Keiffer, “so I sanded it down and then mixed a dye and patted it on. Once the color matched, I put on shellac and finished it with a French polish, a method of adding layers and layers of shellac to give it a mirror finish.” All in all, Keiffer spent approximately ten hours restoring the piece, which gleams like a buffed chestnut. Keiffer runs his hand across the desk’s lid.

“This warped top,” he says, pausing in admiration, “we’re going to keep it because it’s part of the charm.”

In another studio, Bernard Murphy, Conservator and Head of Art Framing, stands in front of a mustard-yellow chest painted with colorful medieval court figures.

“This chest was in someone’s family,” says Murphy, opening the lid. “The father made and painted it around the 1900s. There was paint loss on the figures and scene design and the whole piece had darkened due to the accumulation of grime and oils over time.” Thus, Murphy lightened the chest’s overall artwork and patched and repainted various parts, like the missing head on a male figure.

“We also are repainting the crest,” says Murphy. “We will create a new one based on finding similar crests, showing the client and fine-tuning it to her desires.” Finally, Murphy and his team will build a base to raise the chest.

“It was on the floor and got kicked around and people also were sitting on it,” says Murphy. “So, by making a custom wood base, we’ll raise the chest [above sitting height] and make it more of a focal point.”

According to Manzi, the bulk of what Trefler’s currently restores is furniture and mainly family heirlooms.

“I’d say 90 percent of our business is sentimental,” says Manzi. “I don’t really help many people out front when they come in, but I am always amazed to hear that people are spending hundreds of dollars on even something their grandchild made. We don’t appraise—that would be a conflict of interest—but if people want to spend the money [on restorations], I am glad they’re doing that for their family.” The Trefler Way, of course.



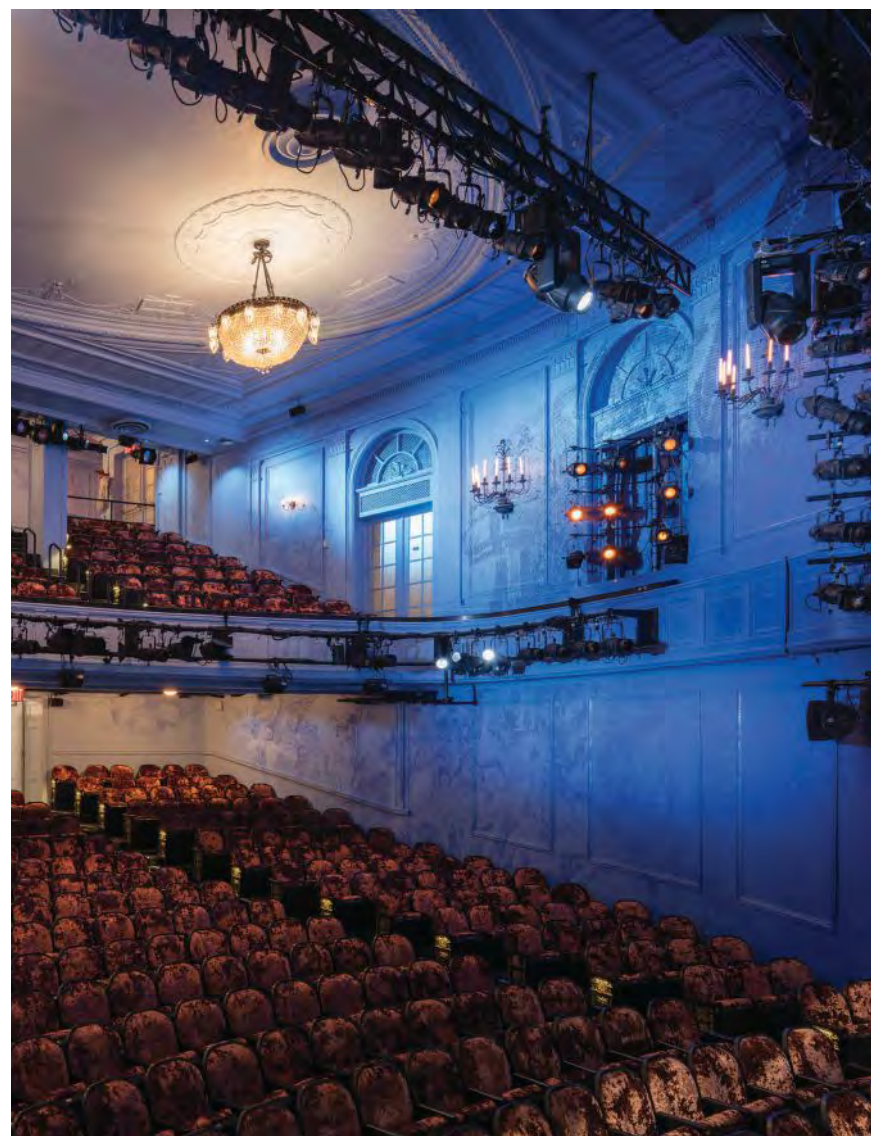


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Mortar—what you need to know for your next masonry project.



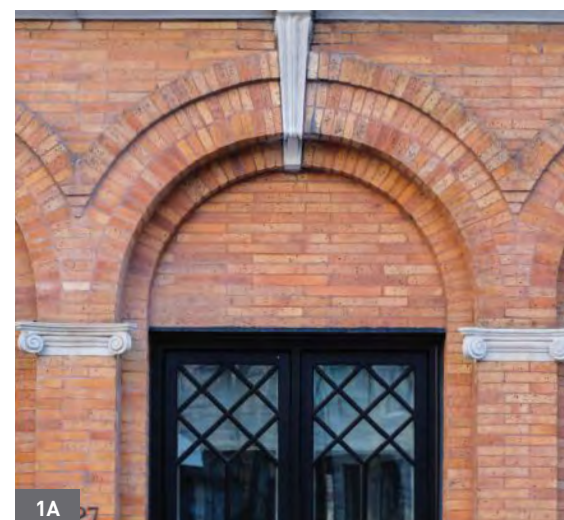
What is it? Mortar consists of sand, cement and water, which chemically reacts to form a hard material. Mortar is the “glue” that holds together masonry units, such as brick, stone and terracotta, so that the assembly is water shedding. When assembling masonry, the mortar is placed full depth and tooled. While mortar is durable, it does weather, and then maintenance is required to keep the wall weathertight.

Repointing is the removal of unsound mortar from the joint and replacement with new sound mortar to match the historic mortar. **(See Photo 1A.)** [Tuckpointing, in its traditional meaning, is the

placement of mortar in the joint without the removal of mortar, in order to fill the joint and cover over any cracked or missing mortar. **(See Photo 1B.)** This is not a recommended practice, as it does not provide thick enough mortar coverage to be durable.] With mortar joints being typically 3/8” wide, and assuming standard size bricks, the mortar joint comprises approximately 16 percent of the area of the masonry surface. With this much at stake, it is critical to get the design of the mortar correct in order to maintain the historic appearance of the masonry. **(See Photos 2 and 3.)**

1A Good quality repointing gives longevity to the masonry and continues its historic appearance.

1B Tuckpointing traditionally refers to placing mortar over top of existing mortar without removing it, leading to bad mortar joint appearance.



History Mortars began 4,000 years ago with mud and clay between stones or man-made bricks. Early lime mortars were composed of mostly lime and sand, sometimes with other additives, resulting in a soft mortar (low strength) that was also slow curing. In the mid-19th century, natural cements were being added for increased compressive strength. By the latter part of the 19th century, Portland cement was being added, which increased its strength but decreased its porosity and changed its color. By the 1920s, bagged Portland, masonry and hydrated lime cements, which could be combined on site with sand and water to make mortar, became available.

Causes of deterioration: Weathering, including freeze/thaw cycles and acid rain, wears away the exterior face of the mortar. The mortar can crack when subjected to the differential movement of seismic activities and building settlement. Unmaintained roofs can introduce water into the wall system, resulting in efflorescence, or depositions of salts on the surface of

the wall. This same moisture can lead to the accumulation of dirt and biological growth, which expedites weathering of the mortar. Finally, a previous badly done repointing job with inappropriate mortar or a lack of joint preparation can lead to damage of the substrate masonry units. **(See Photo 4.)**

Approaching a repointing project: To ensure that the repointing project is correct, start with a mortar analysis of the historic mortar to determine the compressive strength, type of cementitious binder and the sand colors and gradation. The results will aid in selecting the components to prepare a mortar “recipe” in accordance with ASTM C270.

The mortar needs to be strong enough to keep the masonry units together, yet weak enough to be sacrificial, so as not to damage the masonry unit with building movement. The porosity of the mortar dictates its ability to promote drying of the masonry, its second key function. The mortar needs to be dense enough to be weathertight, but porous enough to “breathe,” permitting the moisture in the wall to get to the surface and evaporate out.

To match the existing color, sand typically gives its historic appearance. Match the sand extracted from the mortar analysis for gradation, granule shape and color distribution. When a matching sand can’t be easily sourced, sometimes there is a rush to use colorants to produce the color match. This additive changes the composition of the mortar and needs to be considered as part of the aggregate quantity. If used, colorants must be colorfast to prevent staining of the building. **(See Photo 6.)**



2 Matching the color of the mortar is important to the designed appearance of many buildings. Here the greenish stone and the contrasting red sandstone each have a different color of mortar to underscore the colors.

Cement is the binder in the mortar and can be one of many types. The mortar analysis should determine which of the cements should be used. Lime is traditional, produced by burning chalk or limestone. The resulting pure calcium oxide is referred to as quick

3 For the masonry portion of this building, a beaded joint was used to emphasize the pattern of the ashlar coursing.

4 Deteriorated fine mortar joints showing cracked, separating, eroded and missing mortar.



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Mortar Components

Strength is coded with obscure letters, but there is a key – MASON WORK. ASTM C270 specifies the “recipe” for each of these mortars, along with the minimum compressive strength to be achieved, as follows:

- M – 2,500 pounds per square inch (psi)
- S – 1,800 psi
- N – 750 psi
- O – 350 psi
- K – 75 psi



6 Unstable colorant was used in the mortar, resulting in staining of the stone work.

lime, an unstable white powder that is highly reactive to CO₂ in the air. If slaked with water, it will combine to make lime putty, or hydrated lime. Lime putty is non-hydraulic (cures with carbon dioxide (CO₂) in the air), very soft, very slow to cure and is flexible, permitting some movement in the masonry with the mortar cracking. It can be kept indefinitely if kept covered with water. When limestone that contains silicon, magnesium, aluminum and iron is burned, it results in lime mortar, which is still a non-hydraulic mortar. This can be mixed with a pozzolan, such as ash or brick dust, to make a hydraulic mortar (cures with water).

Natural cement, or Natural Hydraulic Lime (NHL), is similar, except it is derived from burning a particular limestone known as “clayey marls,” in which silica and alumina are naturally occurring. It is these trace elements that render its initial hydraulic set and makes it stronger than non-hydraulic lime mortars. NHLs have no pozzolans added. The most modern cement is Portland, made from burning limestone with silica and alumina at high heat, driving off the water and carbon dioxide. The resultant clinker is ground to a fine powder and mixed with gypsum to make a bag mortar. It is not suitable for repair mortars, since its hardness can damage the softer bricks and stones, while its lower porosity prevents the drying out of the masonry, leading to freeze/thaw damage.

The last component is water, which needs to be clean and potable. If it contains salts or other impurities, it can cause efflorescence, or interfere with a proper bond.

Determine if the building requires cleaning before proceeding with repointing. Where there is a lot of soiling, lichen, moss, vines and so forth, cleaning before repointing ensures that all deterioration is visible. It also ensures that the new mortar has a clean,



5A Note the nicks at the tops and bottoms of vertical joints where a masonry saw nicked the bricks, and the chips along the edges where poorly executed removal of the mortar led to damage.

5B A narrow mortar joint was partially repointed, using too thick of a saw cut, resulting in widening of the joint.



sound substrate with which to bond. Additional mild cleaning may be necessary after the repointing work is complete to remove mortar smears.

When determining whether to partially or fully repoint, assess the quantities of joints that are failing. If there are 10 to 50 percent of joints deteriorated, repoint 50 percent. If more than that, repoint 100 percent. If there are several different colors of mortar present, it is likely time to fully repoint the building. It is difficult to accurately survey the whole building, and using this guideline will provide consistent quantities to get equal bids, with fewer change orders. Further, to cost of access to repoint (scaffolding, swingstage or manlift) is a large part of the cost to repoint, and remains much the same whether partially or fully repointing.

Repointing process: Repointing is the process of removing the deteriorated mortar from the joint and placing new, sound mortar. Methods to remove the mortar may involve masonry saws, plunge reciprocating saws and hammer and chisels, depending on the size of the joint and the hardness of the mortar. Removal of the mortar should only be done by experienced masons, and at no time should the tool remove any of the masonry unit. Special care needs to be taken for short vertical joints or very thin joints to avoid damage to the masonry. **(See Photos 5A and 5B.)** The joint needs to have mortar removed to a depth of 3/8” minimum, or three times the width of the joint, whichever is greater. The cut-out joint must be squared off and cleaned out; not be left with a V or U configuration; and have no dust or unsound mortar present. Rinse out the joints to remove dust.

Mix sand, cement, and water to a consistency of peanut butter. Quantities need to be carefully mea-

7 A sandstone water table was repaired with sealant on the vertical and skyward joints. Moisture was trapped, and freeze-thaw cycling caused significant spalling of the stone.



sured to ensure consistent appearance. Ideally, it should be mixed in a mechanical mixer for best workability.

Once the joint is moist, without standing water, compact the mortar in 1/4” layers, or “lifts,” into the joint. Keep the mortar within the joint and avoid any smears or droppings on the masonry units. Once the mortar is “thumbprint hard,” tool the joint to match the existing profile. Once the profile is achieved, if the project is for a partial repointing, the new joints can be made to look more like the weathered joint by taking a mason brush and tamping the surface of the joint, perpendicular to the surface, to remove the “cream” and bring the aggregate to the surface.

When repointing historic buildings, it is critical to control the mortar shrinkage. Part of the solution is to ensure the aggregates are well gradated, with the largest granules no larger than 30 percent of the mortar joint. Using a stiff mortar and hydrating every 3-6 hours over several days after placement is critical to prevent shrinkage cracks.

Issues: Use mock-ups to confirm competency of the masons for removing joints.

Have mock-ups prepared to ensure that the appearance is correct. Providing the “recipe” from the mortar analysis assists in this process. Ensure that the mortar is weaker than the substrate masonry to avoid future damage.

Mortar needs to be porous to permit the migration of moisture through it, permitting the masonry to dry out. Well-meaning laypersons sometimes use sealant to repair cracked mortar in lieu of proper mortar. Sealant will trap moisture, resulting in damage to the substrate. **(See Photo 7.)**

Performing masonry work in less than ideal weather conditions negatively impacts the quality of the completed result. Compensating for hot weather or cold weather causes its own problems. If it absolutely can’t be avoided, strictly adhere to the cold- and hot-weather requirements as set out in the Brick In Architecture (BIA) Technical Notes.

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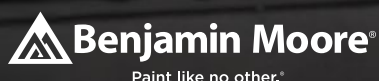
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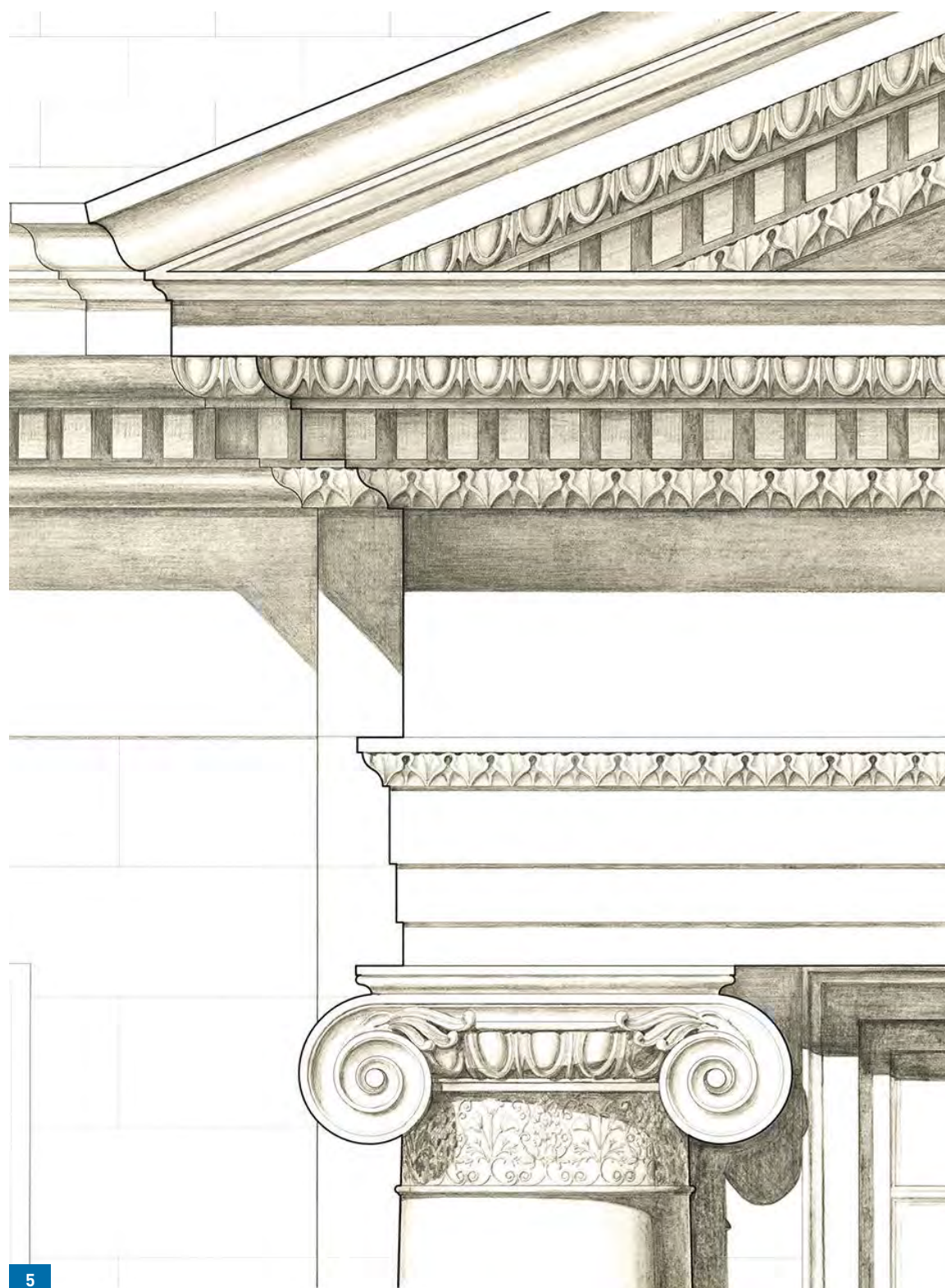
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Moldings, Nature, and Beauty

Embedded in the language of classical architecture are diverse alignments with nature—explicit and implied.



I think that it's safe to say that most of us have experienced times when we were profoundly moved by the beauty of the natural world. We may have surveyed the expanse of the high desert, wondering how such a complex landscape could make us feel so centered and calm. Or perhaps we looked across an alpine meadow and gazed at the complex, chiseled profiles of distant mountain peaks. Or maybe we've walked along the seashore at sunset and were struck by the way the receding waters rippled over the multi-colored stones in the sand.

Experiences such as these are universal among us. Over the ages, and across diverse cultures, one thing that certainly unites us is our ability to find and experience beauty in nature. It seems as though this is a part of our being. Is the ability for us to directly experience the beauty of the natural world around us a part of our DNA? Are we hardwired to receive this gift? It certainly seems so. We may take our children to a great forest of old trees, watching as they gaze in wonder at the complexity of the branching canopy of shimmering leaves. We don't have to teach them that it is beautiful; they know this innately. Experiences such as this are their birthright.

One of the aspects of classical architecture that makes it so efficient at creating beauty in the built environment is the fact that embedded within the grammar are diverse alignments with nature, explicit and implied. And these alignments start with the classical moldings, since they are the "atomic units," the basic building blocks of the classical elements.

ENGAGING THE ORGANIC

Moldings are often explicitly decorated in ways that directly emulate natural forms. The most famous example is the egg and dart motif. This pattern is the traditional style of embellishment of the ovolo (quarter-round) molding. (**See Photo 1.**) First appearing in primitive Greek architecture around the seventh century BC, it is identified by a dominant row of hanging egg forms, alternating with intervening stem or spear shapes, the "darts." There are various myths about the origins of the egg and dart. It might have been intended to symbolize the dualities of life and death, or of male and female.

We can see great variety in egg and dart moldings over history and different cultures, and designers

should feel free to creatively vary their design. Sometimes the eggs are clustered closely together, and the intervening darts are minimized. Other times, the eggs are spaced further apart, and the darts more dramatically pronounced. But whatever the exact details, the sculptural shapes of the egg and dart pattern are potent emblems which remind us of natural forms.

Similarly, the traditional embellishment of the cyma reversa molding is the tongue and dart. (**See Photo 2.**) This theme consists of a drooping, tongue-like shape, alternating with intervening pointed darts. Originating in Greek designs from the fifth century BC, the tongue and dart decoration evolved with many variations, including the leaf and dart, which typically features various vegetal motifs. The “leaf” and “tongue” themes may be understood as appropriate for the cyma reversa molding because their draping form can comfortably conform to its complex profile.

ENGAGING DETAIL AT ALL SCALES

As we have seen, decoration which explicitly emulates organic form is one way that the elements of classical architecture are aligned with nature. But it is certainly not the only way. Implicit within the structure of the classical language is another link to the geometry of nature, and the moldings contain an important key to unlocking that connection.

When we look at the natural world, one of the aspects of it that leads us to the experience of beauty is the engaging complexity of natural forms. The world around us abounds with intriguing form, geometry, and texture, and these elements entice our senses at a variety of scales.

Imagine that we are observing a mature tree on the crest of a hill, from a distance. The overall shape of the tree is a lively and engaging one—generally symmetrical about the central vertical axis of the trunk, but with a pleasing randomness to the profile. As we move closer to the great tree, we start to see the branching of the trunk and limbs of the tree—asymmetrical but following a general rhythm and theme specific to its species. As we approach closer yet, we begin to pick up more detail: the craggy, deeply textured surface of the bark on the trunk, and the delicate, repeating shape of the individual leaves. And if we were to pick one of the leaves and examine it



1



2





closely, we'd see at the finest scale a complex structure of veins embedded within it, reiterating the branching theme we saw at the larger scale.

A SIMULACRUM OF NATURE

This kind of relationship between the very large and the very small is the prevailing condition throughout the natural world. Put simply, this is the way nature works. The language of classical architecture, as a simulacrum of nature, operates in the same way.

When we observe a beautiful building from a distance, we are able to consider the form as a complete composition. Great works of architecture are able to engage our interest at the largest scales. We might be captivated by a bold, symmetrical profile highlighted against the sky. (See **Photo 3.**) As we approach the building, the complex details of the smaller scale elements of the architecture begin to speak to us. (See **Photo 4.**) As we move to very close range, the

moldings that make up the elements start to engage us with a lively play of shade and shadow on their surfaces. And if we look even closer, decorative embellishment of the moldings provide an even finer gradient of detail to delight us. (See **Figure 5.**) The visual and tactile qualities of the small-scale elements of classical architecture are key reasons why we find these buildings so beautiful. It is at this range where many modernist buildings, with smooth, minimalist surfaces and unadorned intersections, fail to engage us in the same way.

This ability for the language of architecture to connect to us at a variety of scales is one of the most potent ways that classical architecture reiterates the natural world. Great architecture connects with us in a series of overlapping realms, each level engaging us in its own way. And the moldings, by enriching the architecture at the scale of the very small, the human scale, are indispensable ingredients in this integrated tableau.



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Tall, deep, and narrow in their massing, townhouses enabled the development of densely populated neighborhoods with both attached and detached forms. With a growing population and westward expansion, they are as identifiable with Midwest cities like Chicago as they are with East Coast cities. They were often distinguished by dimensional stone architectural details that are considered character-defining features today. Dimensional stone is shaped from natural stone that has been quarried.

Gravity, salt, freeze/thaw cycles and less-than-durable stone types have often taken their toll on original lintels, steps, door surrounds, planters, landings, thresholds, railings, balusters and newell posts. What do you need to consider if you are rehabbing an urban townhouse

FAR LEFT Dignity and a warm welcome were carved into column capitals and arch that comprises this townhouse door surround.

MIDDLE There is a rhythm to townhouse neighborhoods. Usually there is a shared setback and similar heights but the individual facades are often punctuated by different architectural details and roof styles.

BELOW The carved brackets and lintel that make up this composition demonstrate Classical ideals for form and function. The brackets are decorative and load-bearing while the carved lintel sheds water and gives interest to the façade.



LEFT: Rendering courtesy studioMDA; RIGHT: Stone Details photo



or building a new one?

Laurie Wells, vice president of sales for Old World Stone in Ontario, Canada, advises that you understand the performance qualities of stone in your area. Some stones are durable, but some have high failure rates. She cites Lake Superior red sandstone, used in the Chicago area, as an example of a stone with a high failure rate and one that does not respond well to patching. Wells has replaced this stone with St. Bees sandstone from Cumbria, England, with great success.

Michael Lynch, AIA, PE, FAPT, director of the Division for Historic Preservation within the New York State Office of Parks, Recreation and Historic Preservation, concurs. Lynch notes that “understanding the industrial heritage is as important” as the geology of your

region. Be sure you are dealing with natural stone and not cast stone or a specialty product, such as the granite-like cut cast stone material made for a brief time by the Onondaga Litholite Company in Syracuse, New York. “Study how materials fail,” he advises. “Be certain you know what you are working on. All masonry materials suffer from mechanical problems like rust-jacking from metal fasteners, but terra cotta will break off in chunks, cast stone blows apart, natural stone will erode or delaminate.”

The projects often begin with a set of design drawings prepared by an architect. The drawings outline the parameters of the work and make bidding possible. Once the job is bid, usually the general contractor or specialty stone contractor will reach out to either a stone fabricator like Old World Stone or to a

draftsman like Alan Barr of Stone Details in Burlington, Vermont, to prepare shop drawings. Both Barr and Wells stress the importance of site visits and taking and verifying measurements, made easier and faster today with laser scanners.

As Barr explains, “The purpose of the shop drawing is to reflect back to the architect our understanding of their design, as well as provide exact instructions and dimensions for fabricating the project.” The architectural drawings show only the broad-brush elements of the design. They may not, for example, show joint patterns, corner conditions, course heights, joint sizing, transition details from one element to the next, stone depth, stone anchoring and exact stone sizing.

The purpose of the shop drawing is to incorporate all these details into a

drawing, submit it to the architect and get approval that indeed the shop drawings conform with the architect’s design intent. The shop drawing can also show the anchoring method for each type of stone. On complex jobs, a structural engineer will also become involved to fully detail and specify the anchor types, size, and method of attachment to the building. These details are usually then incorporated into the shop drawing set.

The shop drawing becomes a contract document, meaning that the shop drawing represents exactly how the stone will be made. This document holds everyone accountable to a final design. This is what will be produced, and if produced to these requirements, this is what will be accepted. This process could take months and have several submittals back and forth as details get refined. There



This image showcases a variety of textures that were fabricated for this Chicago townhouse stairway—smooth, incised lines and rusticated blocks.

“What is your favorite book about stone?”

Alan Barr: The Building Stone Institute merged with the Marble Institute of America to form the Natural Stone Institute. They have a publication called the *Dimensional Stone Design Manual*. That’s probably the best resource I have seen available on the market. associationdatabase.com/aws/MIA/pt/sp/bookstore_documents

Laurie Wells: The best technical reference I would recommend is the *Indiana Limestone Handbook*. It is regularly updated to reflect current industry standards. It is considered “the reference document” for installation and fabrication. Available to download free from the Indiana Limestone Institute of America. ilii.com/pages/handbook/

Michael Lynch: *The Stone Industries* by Oliver Bowles. Published by McGraw-Hill Book Company, NY. 1934 (1st ed) and 1939 (2nd ed.) As Lynch notes, it features chapters on all the major North American-sourced dimensional stones used in building construction with characteristics, industries by state, quarrying methods, market range, etc., plus a discussion of foreign building stones. There is also a chapter on “Deterioration, Preservation and Cleaning of Stonework.” The section on deterioration mechanisms is very still useful, and the section on cleaning includes many warnings about abrasive and over-cleaning that seem to have been forgotten after World War II.

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BELOW A stone carver from Old World Stone carves detailed ornament for a capital.



THIS PAGE: Old World Stone, Ltd. photos

are layout or placement drawings as well that provide a map of where the stones will be installed. When everyone agrees, then the stone can be fabricated. The most popular designs are executed in sandstone, limestone, marble, or granite.

Dimensional stone work is priced on a custom basis for each project, Wells says. The gross cubic footage of the stone is easy to determine, but the needs of each job, such as how much saw time, machine time, handwork, packing, and shipping will vary greatly. The process of finishing or dressing the stone is a language understood universally by most stone fabricators. Some of the finishes include rock-faced or rustic, battled machined, or free handing. Lines are a common detail, such as six lines to the inch measured batting. Consider whether the finishing of the stone is just on its face or border. Clawing is done with a chisel. Punching is done with chisels and mallets. A smooth surface requires lots of hand sanding. Limited sand-blasting may be specified at times to age the stone to match existing conditions. Wells says this can be “controversial.”

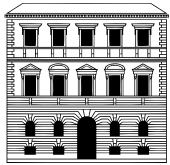
Michael Lynch agrees. Lynch believes it comes down to the quantity and number of elements being replaced. You want to avoid a checkerboard-like appearance of new and old stones side by side, he says, and the attempt to weather the stone with blasting doesn’t usually result in an exact match. With existing limestone, for example, the color of the stone will have changed from when it was fresh. A small repair is one thing, but large repairs warrant caution. He tends to let the new stone simply age in place, and clean the existing stone to freshen its appearance so it more closely resembles the new work.

Barr and Wells concur that prompt

communication is critically important and that changes need to be documented and agreed to via the drawings. The drawings convey the plan but are also the means of communication. Old World Stone often works with and trains the masons or installers who are charged with completing the job. Wells likes to start small with repairs and move on to the more visible, larger repairs, giving skills time to develop on each job. This is not always possible because on stone projects, one usually starts at the base of the building due to load-bearing considerations. The lower levels of a building are more visible to passersby.

The biggest competitor to the use of dimensional stone is a method of patching the existing substrates and then covering the substrate with a cementitious material that is scored to look like stone. In large urban areas with people skilled in such application, this has gained favor as a cost-saving method. Both Wells and Lynch worry about whether the condition of the substrate has been adequately assessed. If the building has been damaged by water infiltration for years, that substrate may also be unstable. The Secretary of the Interior’s Standards for Rehabilitation favor in-kind replacement of dimensional stone, but are not always followed by local preservation commissions, which are often more concerned with appearance than structural stability and long-term performance. Cast stone is also a viable alternative for many jobs and should be matched if it is the original material.

The successful use of dimensional stone demands good craftsmanship, thorough conditions assessment, engineering analysis, and good working drawings that are agreed upon by all the participants in the project.



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BY GORDON H. BOCK

Metals by the Mile

Metals are essential to architecture—however, they can be intimidating to source. Fortunately, we can look to manufacturers and suppliers for expertise.



Eric Roth photo

When it comes to considering metals for traditional buildings, “it’s important that the metalwork as a whole retains its authenticity, integrity of design, and sense of purpose,” explains Larry Robertson of King Architectural Metals in Dallas, Texas, “and it’s important to get it right on day one.” To help, his company has developed a unique, private line of related hand-forgings. “Our Koenig Eisen products are component pieces that, when put together, are able to create enormously elaborate—or simple—staircases, railings, fences, gates, balconies—

any place where traditional architecture utilizes metalwork.”

He says the line represents what they feel is the best of architectural design from a very wide historical spectrum. Styles range from early Greco-Romanesque Iron, Gothic Iron, Renaissance Iron, Baroque Iron, Rococo Iron and Empire, to Art Deco Iron, Modern and Post-Modern Iron as well. Robertson says that any place they’ve had the opportunity to present a hand-forged element into the architectural mix, they have. “The majority of the time, those are covered by balusters,

handrails, scrolls, rings, panels, and so on, but on occasion you’ll also see some hardware-type products, such as latches and hinges.”

There’s authenticity in the metals too. “The majority of the Koenig Eisen line is going to be either hot-rolled or cold-rolled steel,” says Robertson. “Within that group are a few aluminum forgings, but the steels are by far the most popular because we’ve tried to stay as close as we can to the original material types.”

He adds that across the company’s full range, they offer “quite a broad line

of products that encompass a number of different types of materials, including brass, aluminum, stainless steel, and zinc alloy.” Here, metal types often come down to practicality. Since they are a national company serving different climates just within the continental United States, different parts of the country tend to favor different types and sizes of materials. “For example, in some areas where weather and corrosion for outdoor projects is a concern—salt spray and salty air close to the coast, for instance—we do better offering aluminum solutions, as opposed to say,

Dallas, where corrosion isn't as much of a problem."

The company also is equipped to do custom casting. "Seven or so years ago we took part in the restoration of the historic Ohio Governor's Mansion, and we custom-cast finials, rings, bases, posts, and caps from originals forged in the 1920s."

While Robertson says they enjoy a reputation as the nation's largest provider of decorative and ornamental metals, for a good majority of customers they're also a one-stop shop for basically everything needed for their projects. For example, he says they have prefabricated fence panels for both residential and commercial applications, and a line of access control and gate motors for security entrances and perimeters. "We have a stainless steel line for really any kind of construction, as well as light construction commodity steel and molded, long-bar hand rails." Balusters with different types of hammering or manipulations in their shapes are very popular, he says. Equally welcome is the company's same-day shipping policy.

There's help on the dimensional level too in the form of the company's Material Family Coding System. Here, materials of the same size and shape cross-section are identified by letters. "For example, our 'A Family' is 1/2" square, and that's the foundational structure of all of the balusters, rings, panels, scrolls—in other words, all of the foundational pieces are made from the same exact type of material." The material itself may also be solid or tube, which is a consideration when weight is a factor. "Those rings, balusters and so forth made from the same size of material can then come in different sizes, height- and width-wise." He adds that the customer can also choose a number of finials that will go with all of their lines.

There's more to the Family concept than meets the eye. "Depending upon the application or even the region of the country—where specific building codes might vary from one jurisdiction to



TOP Cast ornament, common for fences and railings by 1850 by virtue of its seemingly limitless powers of mass production, is even more available today from dedicated suppliers.

MIDDLE Regardless of fence construction, gates are almost invariably metal to provide strength for swinging and spanning the opening, security against intrusion, and an open showcase for ornament.

LEFT The Koenig Eisen line at King Metals offers clients not only a wide variety of forgings in historical designs, but also a choice of finishes, such as hand-hammering or tooling.

OPPOSITE Decorative railings, such as the basket weave balusters guarding these low balcony windows, are textbook examples of the metalworkers' art, combining practicality with beauty.

Here and Above: Kirte M. Kinser photos

Photo courtesy of King Architectural Metals



Eric Roth photo

ABOVE The austere, svelte design of this hand-forged gate, with its subtly undulating bars, circle motif at the bottom, and radius top, is an ideal complement to a massive arched gateway.

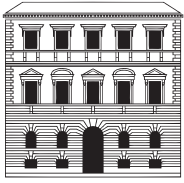
another—our product lines are designed to go across a number of different opportunities and restrictions.” This may just depend upon what the local building inspector requires. “If the local building codes in, say, Dallas, require that all exterior balcony balusters be no less than 9/1”, then we have 9/16” products for them to meet that code—and in many cases the exact same pattern and design is available as another item in 1/2” or 5/8”

or 3/4”. So we have a number of different styles that come in a number of different sizes—and in a number of different finishes like hammering and fluting.”

In essence, Robertson says what most of his customers look for is different choices. “They want to be able to develop a foundational design, and then elaborate with choices. These can even be new designs and styles that still retain the hand-craftsmanship of forgings,

but with a little more modern twist to them—yet still fitting easily into historic properties.”

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



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WINTERTHUR MUSEUM



A Building Revived

GTM Architects custom tailors an 1800s knitting mill to house a software developer's headquarters, among other tenants.

BY KILEY JACQUES

PHOTOGRAPHY BY JOE CEREGHINO

PROJECT: Union Knitting Mills
ARCHITECT: GTM Architects

New brick was selected to complement the existing with new corrugated metal panels to tie in with the new third floor addition.



Architect Kade Sheridan begins her description of the resurrection of the Union Knitting Mills in downtown Frederick, MD, anecdotally: “It was a knitting mill where stockings were made. They manufactured the first pair of nylon hose in the United States, back when nylon was still an experimental textile. It was a middle-of-the-night kind of thing—DuPont had this new textile and they were wondering what could be done with it. They asked if they could put it on the mill knitting machines to see what might happen.”

In a similar vein, GTM Architects worked with Douglas Development on the initial shell building restoration to see what might be made of the old mill. Later, software developer Yakabod became involved as a tenant once the shell was mostly complete. The ultimate goal was to “create a space that embraced the historic character of the building while adding modern elements and providing expansion areas to support the company as they grow.” Located between East Patrick Street and Carroll Creek Promenade, the 40-ft. by 210-ft. tenant space is a direct response to programmatic and adjacency challenges. The original main building dates to the 1890s, and was followed by a series of additions, the last



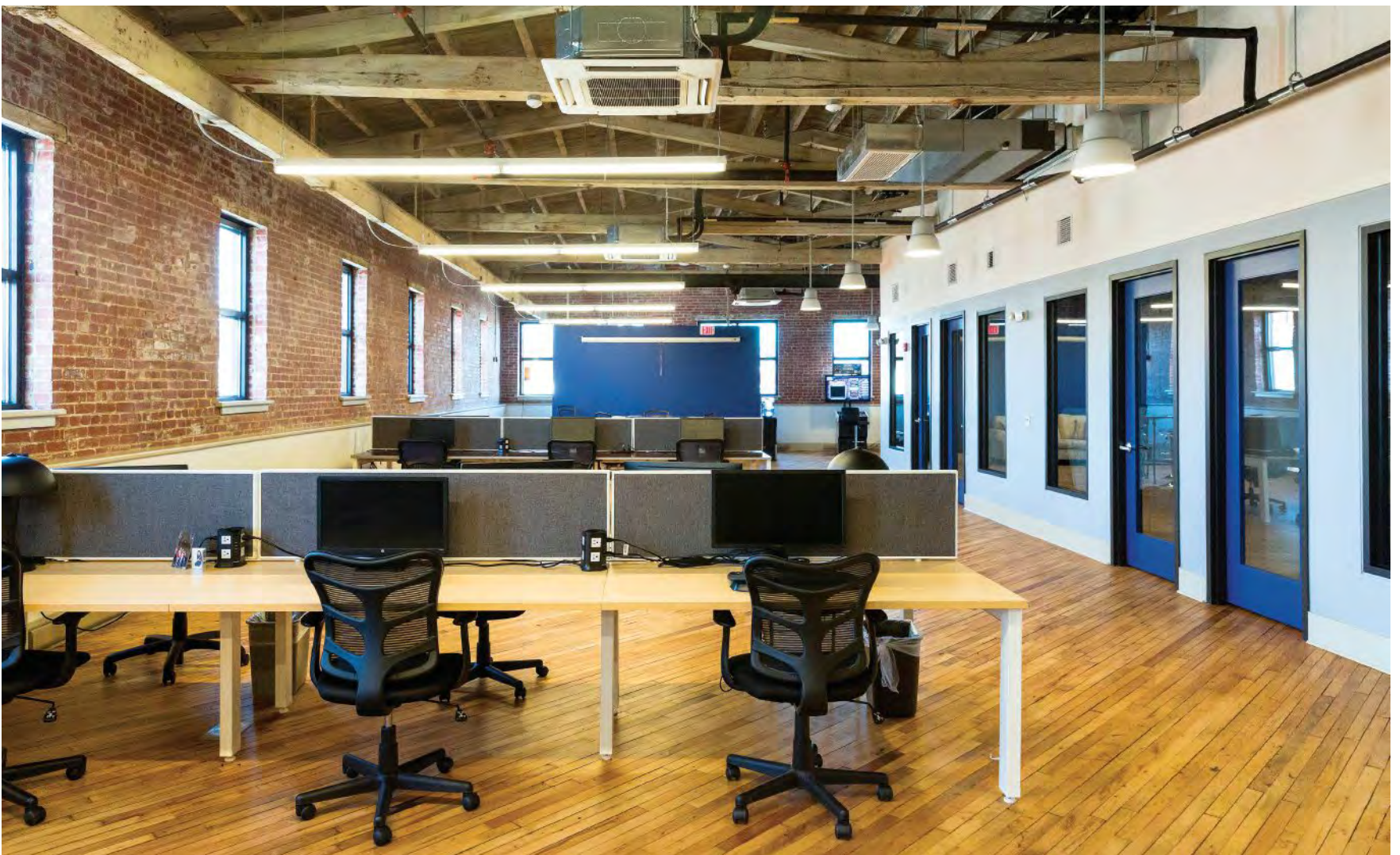
ABOVE Existing building facing Carroll Creek Park. New YKK storefront system windows. New roof and trim.

TOP Third floor addition facing E. Patrick Street, YKK storefront system with corrugated metal panel and black metal trim.

Inside main building lobby addition looking at existing brick walls with exposed structural steel and ductwork. Existing window openings were kept and look from first- and second-floor tenant spaces into the two-story lobby.



“Software companies often want fun, funky work spaces to spark creativity, so this was a great fit.” — KADE SHERIDAN



of which was built in the 1960s. “It was constantly evolving for almost 100 years, and still is,” says Sheridan.

Recalling the condition of the third floor, she adds: “It was condemned and torn down. Roofing paper had been thrown over the existing floor. If you went up to what had been the roof and peeled back the paper, you could see the old hardwood floors, which were pretty damaged at that point.” Adding a new third floor that wouldn’t compromise the existing structure was an engineering feat. The solution was to run columns

just inside the exterior walls down to grade to support the third floor, which means the addition is self-supporting. “If the first and second floor were to collapse, the third floor would remain standing,” Sheridan says, noting that no weight was added to the first and second floors—a strategy that helped to protect the existing building.

Other portions of the building were questionable, too. “There was one section that was in such disrepair that we documented it as best we could before tearing it down and starting over—us-

ing as much of the reclaimed brick as possible,” Sheridan explains. The team reinforced the original wood trusses with steel on the top floor, which worked to maintain the desired aesthetic. The trick there was to add insulation while keeping the trusses exposed. To do so, they used SIP panels on top of the roof—effectively creating a plywood sandwich with the insulation in between. To disguise the underside of the plywood, they used reclaimed boards to mimic what the original sheathing would have looked like.

ABOVE Regent Education Inc. space (second floor) including open workstations and offices.

TOP LEFT Second floor elevator lobby looking towards two-story main lobby.

TOP RIGHT New wood and steel egress stair in existing stair tower.



Because there was no distinct lobby and accessibility was severely limited, a central stair, elevators, and restrooms were added to the building core. A small addition houses a new lobby and the main elevator; and an existing stairwell on the outside of the building was enclosed to serve as an interior stair. “That allowed us to connect the three floors off one central lobby and gave us better circulation and accessibility,” notes Sheridan. Other lifts were added to justify the maligned floors that had been connected by awkward sets of stairs.

Beyond that, the two tenant spaces were developed in accordance with their different needs. The second-floor tenant—Regent Education, Inc.—wanted a breezy, fresh feel but was contending with the potential for a “bowling alley aesthetic,” which can result when working with a long, narrow, columned space. “We tried to load up the offices on one side and incorporate some open areas across from them in a staggered fashion,” explains Sheridan, adding that the integration of barn-style sliding doors also helped to break up the space. In Yakabod’s case, they were interested in open-concept workstations. The third-floor addition has much larger window openings than the rest of the building, so GTM took advantage of all the glass by orienting the workstations toward the windows; those stations are centralized at the middle of the floor plan with circulation around the edges. The 4,000-sq.-ft. “glass box” half of the space creates the open, light, and flexible feel the company desired.

Yakabod’s offices, two large conference rooms, and three “break-out” lounges are all organized within the original masonry-punched window-half of the historic building. The old windows were traditional double-hungs with pockets and weights. Others were

replaced with a YKK system with insulated glass that mimics the double-hung look but are not operational.

Because Yakabod’s former headquarters had been located in a fire station, they were familiar with the challenges that come with an old building. “This raw space was an opportunity to examine what did and didn’t work about their old space and what could we improve upon,” notes Sheridan. Of particular importance to the Yakabod team was a commercial kitchen and facilities to accommodate the potluck meals they enjoy regularly. Surplus electrical outlets were configured to be located outside the kitchen to accommodate a serving table, where everyone can plug in to warm dishes without tripping the circuits. Adding to their culinary capabilities is a professional coffee bar housed around the original freight elevator structure.

To maintain character of the original knitting mill, they left all wood structure unpainted and raw to expose all of the markings that have accrued over time. Sheridan notes a small detail with discernible impact: the existing glass transformers that were used for exterior electrical insulators in the courtyard were removed to re-point and clean the brick but saved and reinstalled for their aesthetic effect. Of course, the exposed rafters, glass expanses, and reclaimed floors are in keeping with the old mill’s personality.

And the project continues. The shell for the second phase—an L-shaped one-story section facing Carroll Creek Plaza—is currently under construction. Two tenants, a brewery and a deli, are confirmed. Other possibilities include a restaurant and/or a farmers’ market. When today’s iteration of the Union Knitting Mills building is complete, it will surely knit together the professional community it houses.



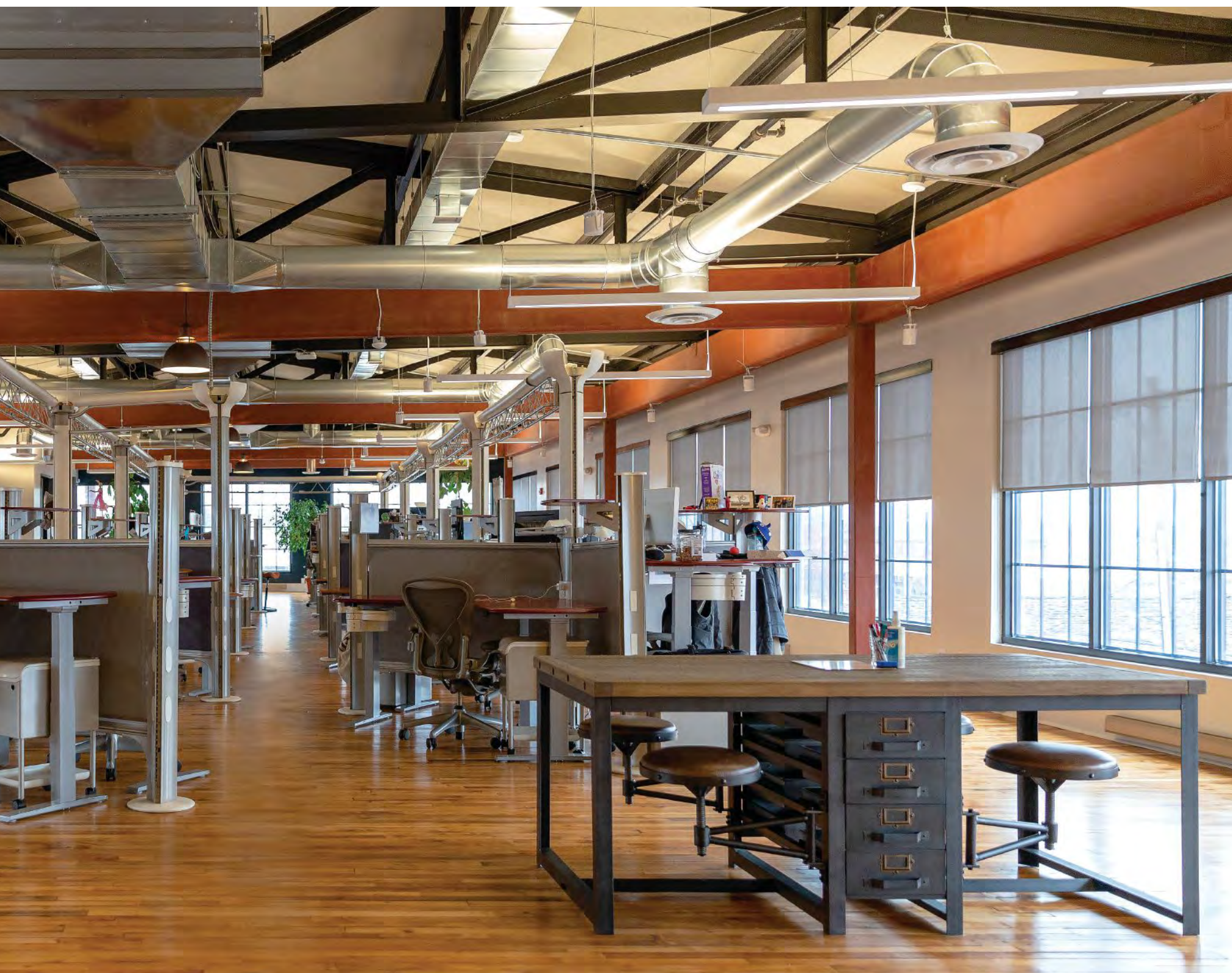
FAR LEFT Library in Yakabod space.

LEFT Conference room in Yakabod space. Glass walls were added to bring light into the central corridor.

Wainscoting was added to increase insulation of the exterior walls, while still allowing for areas of exposed brick.

RIGHT Coffee bar in Yakabod space designed around the structure for the old freight elevator.

BELOW Inside third floor addition open work space. Exposed steel trusses and raw steel beams and columns.



MANUFACTURED LIVING

BY NANCY A. RUHLING
JIM GRAZIANO PHOTOGRAPHY

Historical Concepts designs luxury apartments that reflect the Durham, North Carolina, neighborhood's industrial past.

PROJECT Ninth Street
DESIGN ARCHITECT Historical Concepts

Ninth Street, a recently completed apartment complex in Durham, North Carolina, is designed to pay homage to the neighborhood's rich industrial past. Once home to a prosperous factory, the 7-acre site, which lies between a thriving commercial corridor and the remnants of a mill that has been converted into lofts and offices, was an empty lot.

This gave Charlotte-based developer Crescent Resources and the architectural firm Historical Concepts, which has offices in Atlanta and New York, the opportunity to create a community of industrial-style luxury apartment buildings that look as though they had been erected from the 1800s through the 1930s.

"It's entirely new construction, but it appears to be adaptive reuse like its neighbors," says Historical Concepts president Andrew B. Cogar, AIA. "We created a campus of buildings reminiscent of a generational mill structure that might have developed over time. By invoking the spirit of adaptive reuse through form and detail, the new complex sits comfortably among its neighbors."

Those neighbors, a series of historic commercial buildings, provided the context, Cogar says, "to play off their authentic style and period details." The existence of a Main Street-style urban fabric allowed the firm to "design from the edges in as opposed to the inside out as is typical in garden-style apartments," he says.

Historical Concepts was founded in 1982 by architect James. L. Strickland to create what he calls "timeless homes inspired by historic precedent and informed by the grace and charm of the South."

This design philosophy is not often a priority for multi-family developers, however, Crescent Resources has proven to be an exception, he notes, providing the firm an opportunity to stretch its legs and design a residential project of a much larger scale.

"This is our third apartment development in the state with Crescent," says Cogar, adding that Brian J. Natwick, president of Crescent's multi-family businesses, possessed a singular vision for the project. "They are committed to building luxury apartments in trending communities, and their concept is to build beautiful buildings such as those done before World War II instead of simply constructing a stack of blocks." To date, the Ninth Street development is

Historical Concepts' biggest collaboration with Crescent Resources.

"It's tailored to the neighborhood and history of the site more than any other project of this type that we have done," Cogar says, adding that the Ninth Street district and Durham's downtown are undergoing a renaissance. "We are excited to be adding to the city's legacy with such a bold vision."

The boldness starts at Ninth Street's main entrance, which announces itself via a robust tower that wears its 19th-century style with pride.

"There is historical precedence for such towers in historic mill buildings," Cogar says. "They served a functional purpose; here we just reinterpreted that function." In the case of Ninth Street, the tower anchors the complex and houses

the leasing office. Its rusticated stone base gives it gravitas, and its bracketed cornice and arched masonry window surrounds root it in the 1800s.

The Ninth Street campus features five residential buildings that fit into a historically accurate timeline that progresses from "the ornate brick details of mill architecture and the utilitarian warehouse form with small punched

The tower, which marks the entrance to the complex, features a rusticated stone base, a bracketed cornice and arched masonry window surrounds. Its exterior also provides prime space for developer branding.

OPPOSITE A bridge similar to those seen in factories serves as a light-filled connection between two buildings in the Ninth Street complex. The material—wood—suggests it was a latter-day adaptation.





KEY SUPPLIERS

DEVELOPER Crescent Resources

ARCHITECT OF RECORD Doug Granade of Cline Design Associates,
Senior design team: Cari Jones and John Felton

BRICK SUPPLIER Custom Brick and Supply Co.

LANDSCAPE ARCHITECT John Wood of Cline Design Associates



windows to the larger scale of the mid-century factory highlighted by oversize window openings,” Cogar says.

Each building has its own sense of style, giving the project the feel of a community with five distinct neighborhoods. The structures are connected via stunning enclosed bridges that feature factory-style walls of windows and industrial supporting wood trusses, steel fittings, and plank decking.

“You see these kinds of connections between buildings in a lot of factories,” Cogar says. “They were conveyors of materials from one workshop to another.”

By adhering to architectural history, the Historical Concepts team—which included Strickland, Cogar, principal Domenick Treschitta, and project manager Clay Rokicki—was able to scale the buildings to their surroundings. The uneven topography, Treschitta explains, also was an incentive to vary the massing of the 303-unit complex.

“By creating a coherent complex of buildings, we were able to provide visual variety but also different breaks along the block,”

he says. “The breaks between buildings provide various pedestrian entries and create circulation through the complex via private courtyards, gardens, and pedestrian alleys.”

The design allowed the team to seamlessly incorporate a large, multi-level parking garage. “We didn’t attempt to make it look like something else,” Treschitta says. “We deliberately let it be what it is. It looks perfectly natural for a factory setting because it’s surrounded by the residential units, and there are only two entrances to it. It looks like a loading dock.”

In addition to architectural styles, one prime way the team conveyed the passage of time was through brick choice. Sourced from Custom Brick and Supply Co. in Raleigh, North Carolina, the new bricks follow the team’s historic, fictional timeline, changing color from the reds and oranges favored in the Victorian era to the darker brown hues of the 1920s and 1930s.

“The choice of masonry instead of the more prevalent wood or stucco was key to the project,” Cogar says. “The colors,

textures, and shapes of the bricks change with the age of the buildings. They go from uneven hand-molded forms of the 1800s to ones that are wire-cut and manufactured in factories.”

Every building has its own landscaped courtyard that is distinct in size and shape.

The landscape design, by Cline Design Associates, a Raleigh- and Charlotte-based company that also served as the project’s architect of record, includes a sunken garden with a dog run. The buildings’ courtyards feature low-maintenance native plants that provide shade, color and privacy for units while framing public views and passageways. In addition to a variety of evergreens, notably arborvitae, holly and boxwood, the plantings include azaleas, crepe myrtle, and native ornamental grasses.

Ninth Street, which was completed in 2015, has settled into the neighborhood nicely.

“Of all the projects we have done with Crescent, this one feels particularly rooted in time and of its place,” Cogar says. “It hit the sweet spot.”

ABOVE In keeping with the style of the neighborhood, Ninth Street, a luxury apartment complex in Durham, North Carolina, is designed to look like an industrial factory that evolved from the 1800s through the 1930s.

OPPOSITE A connector bridge has factory features—supporting wood trusses, steel fittings and plank decking. The scale and rhythm of the windows also reference historic factories.



Townhouse Interiors

When it comes to designing spaces in historical rowhouses, Gerald Pomeroy looks to classical principles for inspiration.

BY MARY GRAUERHOLZ

The interior details of a renovated Boston townhouse marry well with the homeowners' English and Asian antiques. (All photos are of historic urban townhouses.)

THIS SPREAD: Robert Benson photos



The new staircase in a townhouse with décor by Gerald Pomeroy is enhanced by an elliptical domed ceiling.

Since founding his namesake firm almost 24 years ago, Gerald Pomeroy has carved a profile as a go-to interior designer of historic townhouses, as well as more modern environments. A classicist, Pomeroy knows good bones when he sees them. In the brownstone Boston office of Gerald Pomeroy Interiors, the designer says he pores over reference books and town records before he begins restorations of “buildings with significant age”—abundant in Boston and other cities—and the fine points of décor.



The stairway's dramatic mural, of a pastoral landscape, unifies the space near the entry to the townhouse.



ABOVE Pomeroy chose a soft color palette to enhance the architecture. Respecting the architecture, he says, is key to interior design of historic townhouses.

OPPOSITE, CLOCKWISE FROM TOP A bright, cheery sitting room takes advantage of a garden view.

Custom-built cabinetry, in the color “Drawing Room Blue,” is finished with brass hardware, trim, and faucet.

The banquet seating was designed for family dining. Antique blue and white plates mixed with Delft blue marble plates accent the walls.

He has won many accolades, including a Bulfinch Award from the New England Chapter of the Institute of Classical Architecture & Art, for the restoration of an 1800s brownstone on Pinckney Street in Boston’s Beacon Hill neighborhood and a Pineapple Award for excellence in design from the Junior League of Boston for his work on show-houses.

Restoring and decorating these iconic old buildings requires a fine eye, as well as solid relationships with other professionals and the clients. “I like and embrace each phase,” Pomeroy says. “It always starts with the architecture and the client.” Here he talks candidly about what classicism and its relationship to townhouses means to him and some “surprises” he has dealt with—both the good and the bad sort.

What defines a classical townhouse interior for you?

Respecting the architecture and having that guide you in terms of where to go with fabrics, lighting, floor plans, and all the other fine points. That could mean a more contemporary direction, transitional, or clean and classic. Any of these would be appropriate if you follow the original considerations.

What are the challenges in incorporating classical principles in an 1880s townhouse while keeping it inviting and workable for 21st century life?

Whenever possible, restoring a structure with the original floor plan and details is my number one goal. We do a lot of research. If we don’t have clear plans, we try to uncover them, by going to City Hall or the restoration commission. (In

Boston, it’s the Beacon Hill Architectural Commission and the South End Landmark District Commission.) It’s a bit of detective work.

Depending on the condition of the building, you can adhere to the original as much as possible, but also take liberties. We’re designing for people living today, hand-in-hand with the architect. From there, of course, I focus on my clients: what their needs are, how they plan to live in the space, and what adjustments and changes should be made so the house works for them and fulfills their needs on a daily basis.

Regarding those unanticipated, unplanned-for discoveries, have you experienced an extremely happy surprise in a project and the nerve-racking, hair-pulling opposite?

All of the above! Certainly when work-





Natural lighting in a historic townhome's master bath lends to the feeling of sublime luxury.



ABOVE Pomeroy designed the upholstery and drapes for the master bedroom, on the second level.

BELOW Clean, simple, pure: the receiving room of a main living space on the parlor/entry level.

ing on structures of significant age, regardless of the condition, you are always aware that surprises are inevitable—sometimes good and sometimes bad. You adjust, review, make the appropriate changes, and move forward.

A Bad Surprise: We were working on an 1840s Greek Revival in the South End's 8 Streets neighborhood in Boston, which had been divided into three units. In our attempt to restore the original floor plan, we discovered that much of the structure had been compromised. We were left with a mere shell and then had to recreate millwork and floor plans that would have resembled the original architecture of the home.

Many awful things had been done to it over the decades. Instead of restoration, we were recreating. We also had to make it livable as one home for a family, which meant more open spaces than was common in the 1800s. On the other hand, in the parlor level, just beyond the foyer, historically there was more openness, so we were able to adapt.

A Good Surprise: In another 1800s brownstone project, a nice surprise was discovering that the original moldings and details were intact and could be restored and used as a connecting thread throughout each floor. I was inspired by the ornate moldings; it was in remarkably good shape. It informs you, and you kind of run with it.

You work primarily throughout the East Coast. Do you see differences in design sensibilities between northern and southern interiors?

In terms of decorating, I find classic interior design is more prevalent in the South, perhaps because their lifestyle seems to encourage and accommodate gracious in-home entertaining. So their interior design lends itself more to classic design than in the North. On the East Coast, we could learn something from Southerners. Maybe it's the pace of life, but we've kind of veered away from at-home entertaining. Southerners still embrace the art, and their interiors reflect that.

What is your home like?

I live in a 19th-century brownstone in the historical 8 Streets District of the South End in Boston, which I restored. I am very fortunate that the parlor level of my home lends itself to a more open concept lifestyle, which quite frankly suits how I prefer to live. I was very excited about the restoration. In my mind, like with a client, I thought about the way I live and what I'm comfortable with, and, of course, considered my two English cocker spaniels.

www.gpomeroyinteriors.com



THIS SPREAD: Eric Roth photos



Pomeroy chose a dramatic wall covering, and details reflective of 19th century style, for a powder room on a townhome's garden level.

FROM PRINTING PRESSES



Ziger|Snead Architects transforms the historical A. Hoen Lithograph Company buildings in East Baltimore for modern use.

BY GORDON H. BOCK | ALL PHOTOS COURTESY ZIGER/SNEAD UNLESS OTHERWISE NOTED

PROJECT A. Hoen Lithograph Company Buildings
ARCHITECT Ziger|Snead Architects

ABOVE Established in Baltimore in 1835 by Edward Weber and August Hoen, the A.Hoen Lithograph Co. ranked among the premier color printers and, until it closed doors in 1981, was the longest continuously operating such business in America. A. Hoen was renowned for their diverse and top-quality output, such as innovative and highly accurate color maps, medical charts, posters, and work for the National Geographic Society in Washington, DC.



ABOVE & RIGHT Unlike modern printing that combines dot patterns of four colors to simulate a greater range of colors, in chromolithography each color is pigmented ink applied to paper with a lithograph limestone. The hallmark of A.Hoen printing was fine gradations of shading produced with the lithocaustic method patented by August Hoen in 1860.



TO NONPROFITS

BELOW Building One dating to the 1880s stretches the full length of the block—320 feet long and a landmark to local industry.



Adaptive re-use projects are something of a chrysalis, and one of the most dramatic rebirths is the steam-era factory that metamorphoses into 21st-century office space, such as the rehabilitation of the A.Hoen & Company site now underway in a former smokestack district of Baltimore, Maryland.

The buildings, which occupy an entire city block in East Baltimore, were a major area industrial center for over a century, but when abandoned in the 1980s joined other sites in the distressed “Amtrak corridor” that’s suffered from lack of investment for a long time. “The A.Hoen Lithograph Company was in some unbelievable buildings,” explains Steve Ziger, FAIA and partner at Ziger|Snead Architects, “the biggest being like a cathedral to industry.” The team goes there a lot, he says, “and the site definitely resonates with the ghosts of workers, the sounds of presses and manufacturing, and an optimism that had disappeared from the area.”

At its peak, A.Hoen & Company was a complex of six buildings. According to Jonathan Lessem, AIA, LEED AP and Principal, “The star of the show is Building One, which is quite long—320 ft. and extending the full length of the lot. Building One and Building Four date to 1885 (built for a previous occupant) and are the original buildings on the site.” Building Two was added a bit later when the Hoens bought the property in 1902, and what the architects call Building Three occupied space between Buildings One, Two, and Four that was filled in 1915-16. “For this project, Building Three, with the exception of its structure, has been removed to allow for a court that will reinforce a sense of community between all of the future offices, and Buildings One, Two, and Four are restored as part of a Historic Tax Credit redevelopment.”

Building One is a textbook example of late 19th-century industrial construction, with heavy, solid-brick masonry exterior walls supporting heavy-timber framing inside. Says Lessem, “There’s a tall first floor with a mezzanine on one end, and a second floor with its own mezzanine above that.” Building Two he says is very similar—a very tall, two-story building, but without a mezzanine on the second floor. “When we first went to the buildings, everything was boarded over and it was hard to see inside without a flashlight. Now that it’s opened up, the view is an exquisite interior longer than a football field with heavy, barn-like framing, thick, exterior masonry walls, and windows on both sides.”



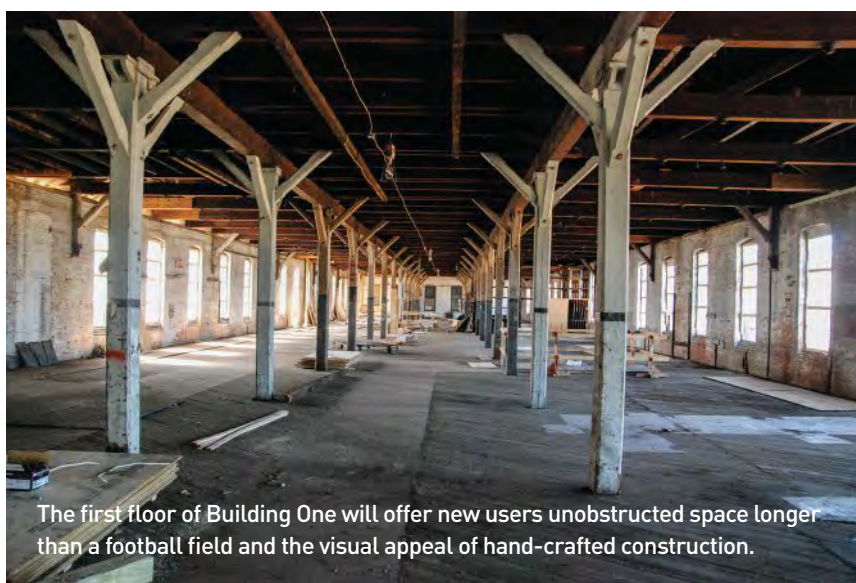
The historic lime mortar-and-brick walls needed repointing and even wholesale rebuilding where trees had invaded.

He adds that while the buildings are utilitarian and short on ornate decoration, there is a lot of detail and appeal to the interior. “Because this is a historic tax credit project, brick that was exposed historically cannot be covered. However, that will ultimately be an aesthetic asset.”

In fact, the project benefits from multiple incentive programs: the Maryland Sustainable Communities Rehabilitation Tax Credit, New Market Tax Credits, Federal Historic Tax Credits, Baltimore City Housing & Community Development grants, and a C.O.R.E. grant from the State of Maryland. “All of our materials are being approved by the Maryland Historical Trust and National Park Service,” says Lessem, adding



This rendering of the finished A. Hoen project shows the site in East Baltimore near Amtrak and the immense size of Building One. ZIGER | SNEAD ARCHITECTS



The first floor of Building One will offer new users unobstructed space longer than a football field and the visual appeal of hand-crafted construction.



Classic 19th-century mill construction of heavy timbers supports the second floor but with ample capacity for a new life in a new purpose.

that a lot of their projects that transform historic buildings involve Historic Tax Credits. “If it weren’t for the tax credits, this project probably would not have happened.”

What’s more, the A.Hoen adaptive re-use is something of a snapshot of the Ziger|Snead project list. “A large part of our practice is in Baltimore because there’s so much to do here,” explains Ziger, “and we like to help give back to our community and transform neighborhoods.” He says projects like this—turning an abandoned complex into a community asset—have a lot of meaning for the firm. “They’re not easy. They take a lot of patience, effort, and give and take. But we do these kinds of complex, messy projects really well, and we do a lot of them.”

When completed later in 2019, the buildings will house offices for an uncommon mix of uses. As Ziger explains, the vision of developers Cross Street Partners is to not only transform a blighted property into a community asset, but to also find an opportunity for social services and non-profits to be together, collaboratively, in a campus setting in East Baltimore. “It’s not the same as turning this site back into a printing facility; it’s really recognizing the needs of the community and using the buildings as a catalyst for improvement.” As of now there’s a “critical mass” of social-service non-profits committed to the project, says Ziger. “That provides a kind of anchor tenant, and helps to define the type of culture that’s being sought around

what might be called a consortium of non-profit agencies.”

STEMMING DETERIORATION AND INVASION

What’s the path from late 19th-century industrial plant to 21st-century office space? Not without speed bumps. Says Lessem, “One of the challenges for a building like this—especially one historically protected—is meeting modern environmental codes.” He says the rehabilitation of the core shell of the building is designed to achieve a minimum of U.S. Green Building Council’s Leadership in Energy and Environmental Design (LEED) Silver, but normally they would also be able to attach insulation to the inside walls throughout the building. “We’re restricted from doing that now and we have to leave the brick exposed.” He says retrofitting building systems into a structure that didn’t originally have them is another challenge, and other limits on what they can do drives decisions about the efficiency of building systems and the like. “Aside from that, there’s a lot of unknowns. With a building the condition of this one, the deeper you get in, the more you uncover.”

Indeed, one might expect a former industrial site to hide a few lingering environmental issues, yet few would anticipate they’d be literally growing out of the woodwork, which is the case with the Paulownia trees. Native to China where they are cultivated for lumber, Paulownia trees are extremely fast grow-



LEFT Seeking water, pesky Paulownia trees had invaded the soft brick masonry, often separating the wythes as they grew.
Photo courtesy John Matteo

BELOW Historically sensitive repairs to timber strings included additive reinforcement.

MIDDLE Beam ends were rebuilt in-kind with timber.

BOTTOM The second floor—another remarkable run of unobstructed space.



ing—as much as 20 ft. a year—and so tolerant of urban environments America considers them an invasive species. As luck would have it, the soft, lightweight seeds of the Paulownia were a popular packing material of Chinese exporters in the 19th century, and some had found a home in the A.Hoen buildings with dramatic consequences.

“The lime mortar in the historic masonry was very favorable for tree growth,” explains John Matteo, PE, Principal 1200 Architectural Engineers “and over time the roots would propagate within the wythes of the brick masonry and the trees would grow right up into the walls—to the point where the walls would start bulging out.” As Matteo recalls, all the buildings were beset by trees, but less so in the more modern, concrete-block buildings. Evidently, water drew the trees towards the outer wythes of the multi-wythe walls. “Sometimes you would just see leaves coming out of the exterior walls, so in several locations we actually had to remove full tree trunks as much as 16 in. diameter that had grown integrally with the wall.” He adds that commonly there were roots propagating along the eaves and gutters where water might be.

“Unfortunately, we found the only solution was to really dig in, track down the roots that were growing in the wall, and remove them because even a small amount left behind would regenerate and start causing problems again.” No surprise, the Paulownia is sometimes called the Phoenix tree because one of its advantages as a cash crop is the roots begin growing again soon after the trees are harvested. Matteo adds that though biocides were contemplated, they were not used for environmental reasons.

For the most part though, he says structurally, the historic buildings remained very robust. “There is a lot of capacity in the historic timber and masonry walls by virtue of the previous industrial application, and we didn’t have to do a general upgrading of capacity for the new uses.”

Problems with the timber framing were mostly the result of moisture damage due primarily to failure of the exterior envelope—leaking roofing, windows, and doorways. “We wanted to keep the repair work consistent with the historic construction, so the timber repairs are typically either additive by sistering with new sawn or manufactured lumber or, in some cases, full replacement of members.” In one area where there was a change in loading, they added new wood bracing members. “For example, we’re adding a new area for mechanical units where a water tower used to be,” says Matteo, “so we’re reinforcing a column with new bracing elements to increase timber column capacity.”

Overall, he says they’re very excited to be involved with the revitalization of a set of buildings like this. “Usually they involve a certain amount of creativity in terms of really maximizing the use of the buildings, but that’s why I’m attracted to them,” adds Matteo. “When you’re working with buildings like these, they’re so massive they’ve got a lot of potential, and are therefore very versatile as far as types of new uses.”

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

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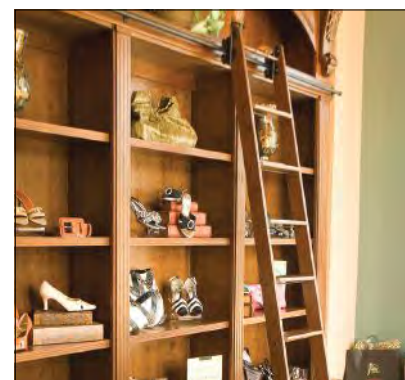
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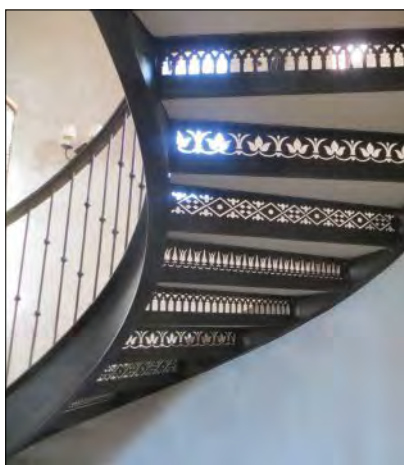
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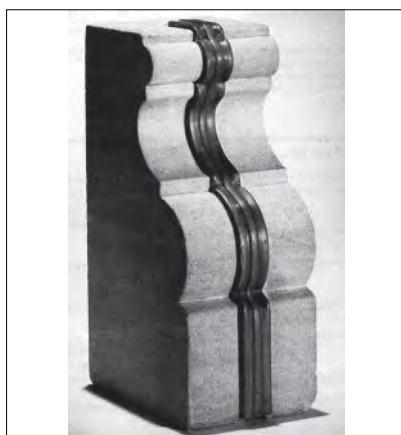
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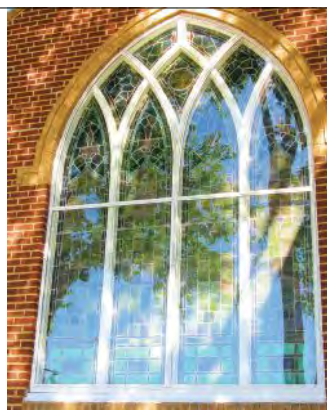


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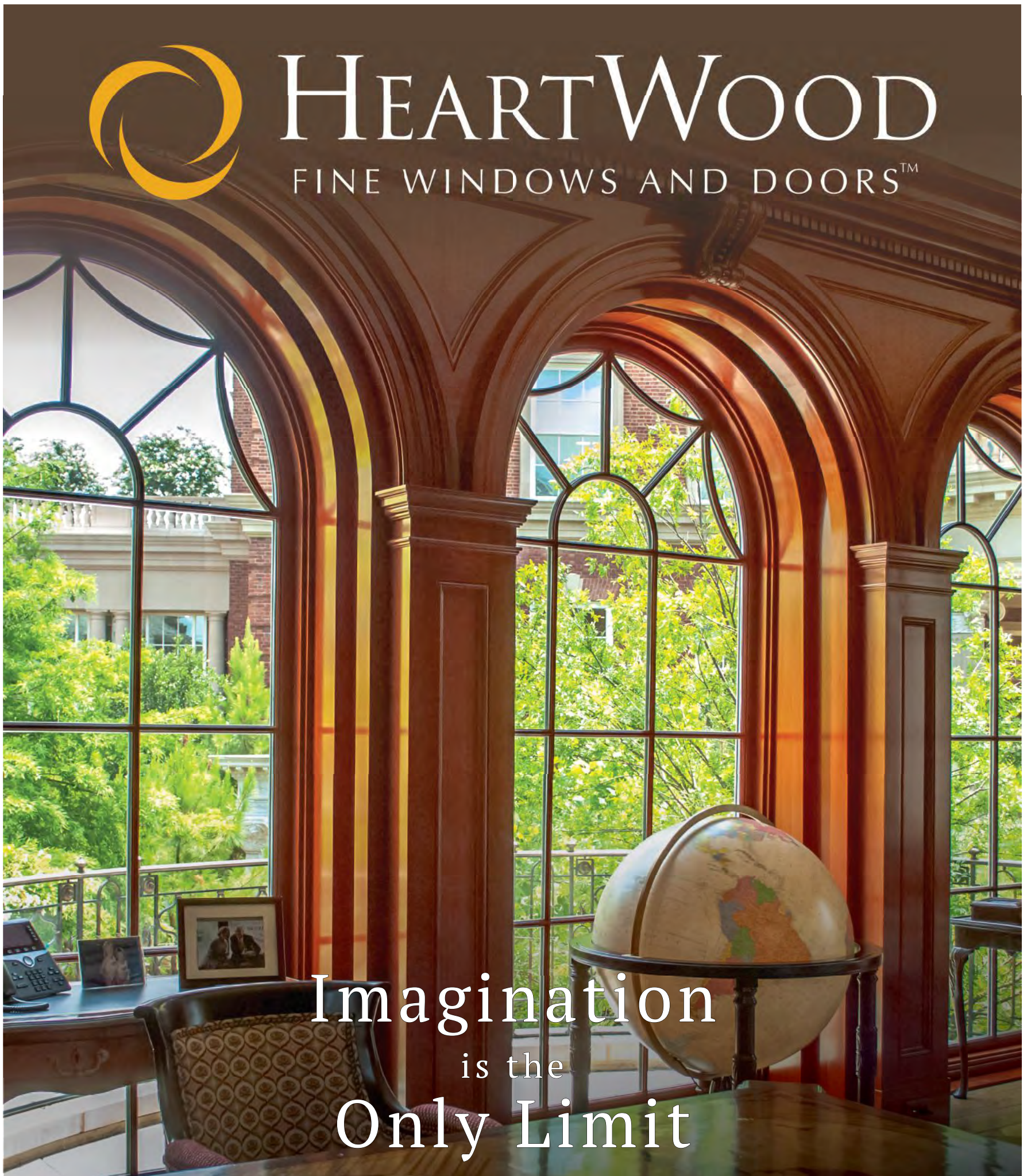
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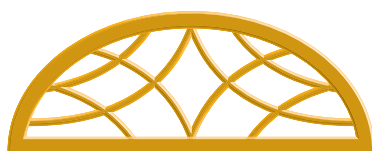


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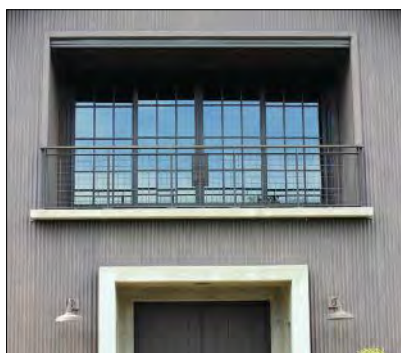
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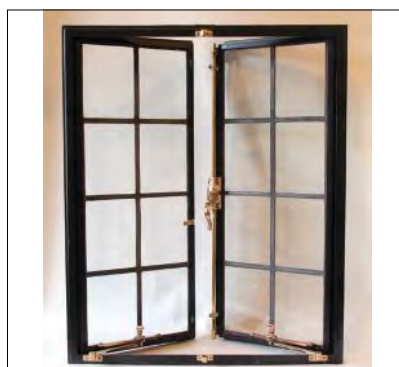
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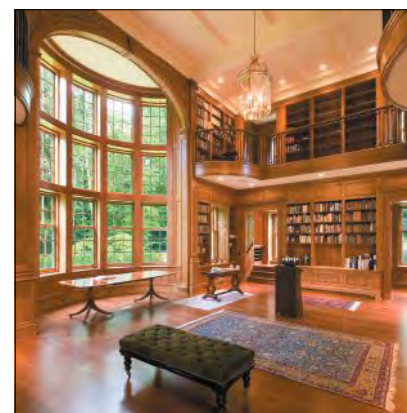
WEATHER SHIELD WINDOWS & DOORS

800-538-8836

www.weathershield.com

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Weather Shield is a Midwest manufacturer of high quality, highly efficient windows and doors that have been handcrafted for over 60 years. Weather Shield has a wide range of products and styles to fit both contemporary and traditional homes, as well as light commercial buildings.



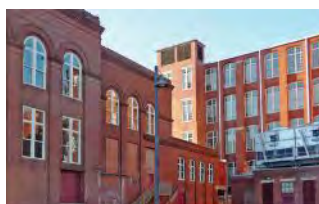
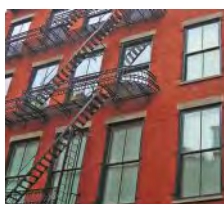
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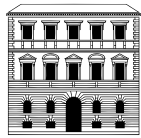
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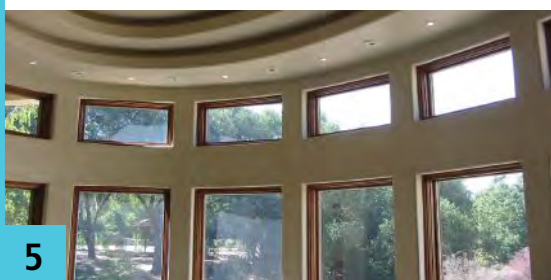
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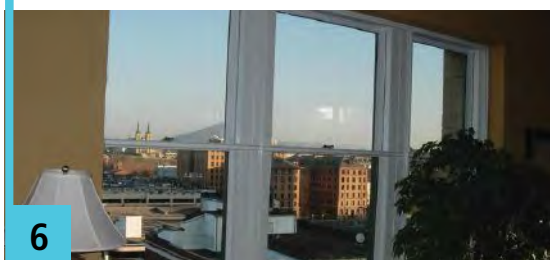
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Speaker:

David Martin, President, Allied Window



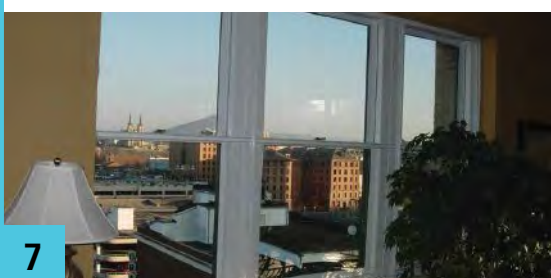
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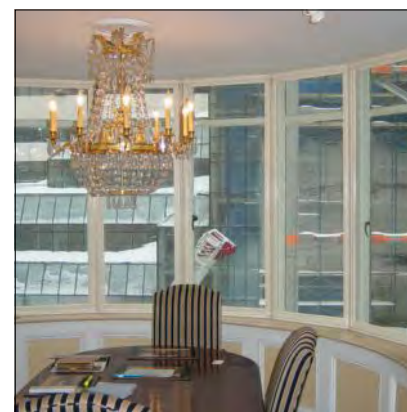


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www.archangleohio.com
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Custom fabricator of special shape aluminum storm doors, windows, hardware & screens: round top, arch top, cathedral & Gothic designs; tempered & low-e glass.

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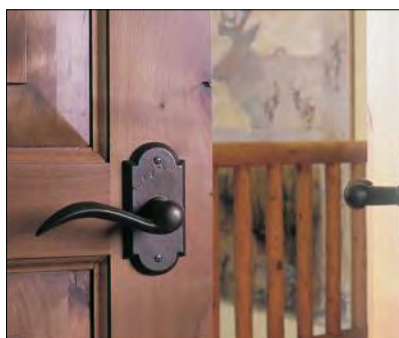
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800-225-1414; Fax: 801-280-2493
www.historicalarts.com
West Jordan, UT 84081

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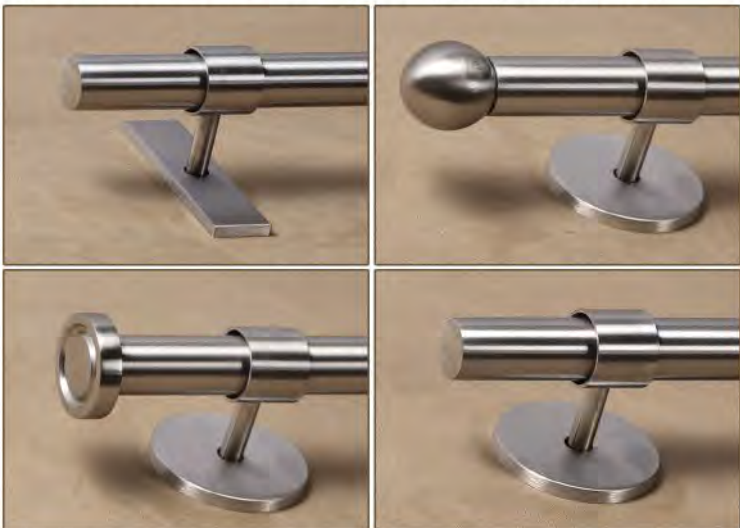
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www.historicalarts.com
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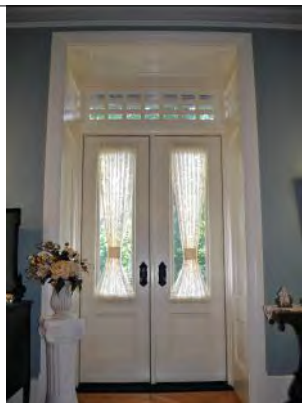
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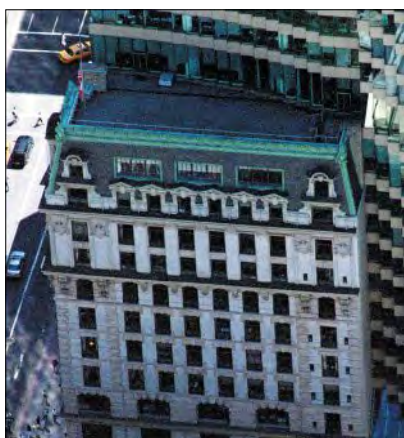
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Designer & custom fabricator of ornamental metalwork: doors, windows, hardware, stairs, balustrades, registers, fences, lighting, gutters, columns, weather-vanes, snow guards, cupolas, planters, fireplace tools & more; iron, bronze, aluminum & steel; restoration services.

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COE STUDIOS, INC.

510-527-2950; Fax: 510-527-0103

www.coestudios.com

Berkeley, CA 94710

Manufacturer & custom fabricator of exterior lighting: forging, hammering, repousse & lost-wax castings; solid bronze & iron; any style or period.



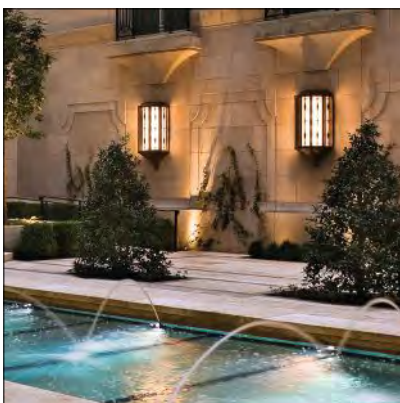
COPPERSMYTHE, JOSIAH R.

800-426-8249; Fax: 508-432-8587

www.jrcoppersmythe.com

Harwich, MA 02645

Supplier of handcrafted Early American & Arts & Crafts reproduction lighting fixtures: lanterns, chandeliers, sconces & post lights; copper, brass, tin, wrought iron & wood; catalog \$3.



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540-745-3900; Fax: 540-745-3911

www.crenshawlighting.com

Floyd, VA 24091

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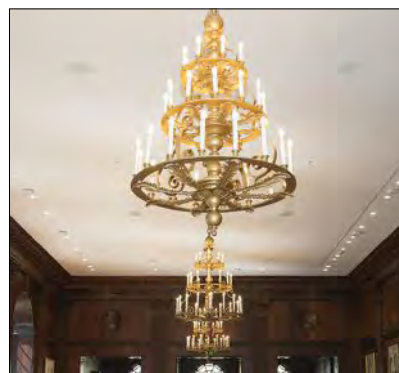
877-778-4042; Fax: 410-778-4070

www.deeplandingworkshop.com

Chestertown, MD 21620

Manufacturer of custom lighting fixtures: chandeliers, sconces, pendants & lanterns; new designs, historic reproductions & custom work; handcrafted in wood, tin, brass or copper; glass, mica or alabaster shades.

SEE OUR AD ON PAGE 74.



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.

SEE OUR AD ON PAGE 74.



HANOVER LANTERN

717-632-6464 X4044; Fax: 717-969-2930

www.hanoverlantern.com

Hanover, PA 17331

Manufacturer of exterior cast-aluminum lighting fixtures, poles, bollards, mailboxes & accessories: commercial, residential & landscape lighting; 23 different hand-applied finishes.

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www.hmwp.com

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Foundry, blacksmith shop and custom metal fabricator offering historically accurate and custom-designed lighting, architectural hardware, and designer-envisioned metalwork including interior and exterior gates & railings.

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HISTORICAL ARTS & CASTING

800-225-1414; Fax: 801-280-2493

www.historicalarts.com

West Jordan, UT 84081

Designer & custom fabricator of ornamental metalwork: doors, windows, hardware, stairs, balustrades, registers, fences, lighting, gutters, columns, weather-vanes, snow guards, cupolas, planters, fireplace tools & more; iron, bronze, aluminum & steel; restoration services.

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HOUSE OF ANTIQUE HARDWARE

888-223-2545; Fax: 503-233-1312

www.houseofantiquehardware.com

Portland, OR 97232

Manufacturer & supplier of vintage reproduction door, window, shutter, cabinet & furniture hardware & accessories: Federal, Victorian, Colonial Revival, Craftsman & Deco styles; lighting fixtures, push-button switches & plates; bathroom accessories; registers & grilles.

SEE OUR AD ON PAGE 75.



LANTERN MASTERS, INC.

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www.lanternmasters.com

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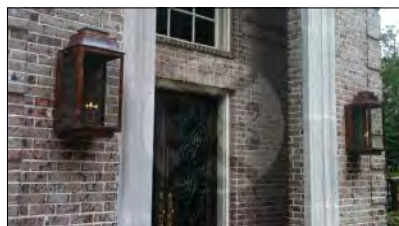
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www.scofieldlighting.com

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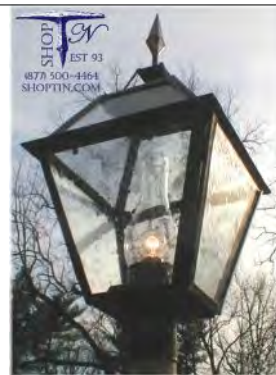
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www.slalco.com
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STEVEN HANDELMAN STUDIOS

805-962-5119; Fax: 805-966-9529
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

360-379-9030; Fax: 360-379-9029
www.vintagehardware.com
Port Townsend, WA 98368

Supplier of door hardware, window hardware: window locks & sash lifts; drapery hardware; bathroom accessories; reproduction lighting; weathervanes.

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WIEMANN METALCRAFT

918-592-1700; Fax: 918-592-2385
www.wmcrafter.com
Tulsa, OK 74107

Designer, fabricator, finisher & installer of fine quality custom ornamental metalwork: railings, fences, gates, custom, hot-rolled steel doors & windows, lighting, grilles, bronze & aluminum entry doors; all cast- & wrought-metal alloys, finishes & architectural styles; since 1940.

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Open flame burning is an optional light source available in most of our fixture designs or custom made to match your own design. We offer an electronic ignition option for gas burning lanterns, which can be configured to run dusk to dawn. These igniters also have a feature that will relight the flame if it gets blown out by high winds. Ignition systems are proudly US made.

Ball and Ball continues to create authentic reproductions of period designs using period fabrication techniques and superior craftsmanship. We have over 65 years of experience fabricating reproductions of lighting fixtures.



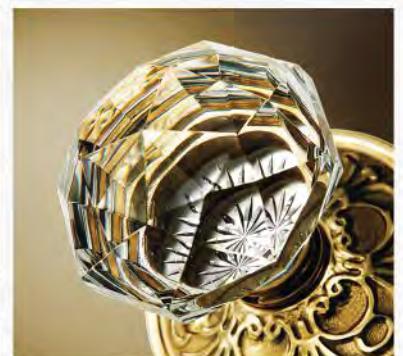
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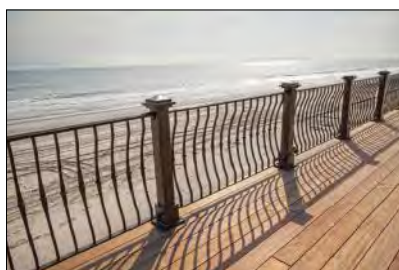
STAIRS & RAILINGS



BILL'S CUSTOM METAL FABRICATIONS

516-333-3562; Fax: Same as phone
www.ironcrafters.com
Westbury, NY 11590

Manufacturer of ornamental metalwork: railings, gates, furniture, fireplace doors, mantels, hardware & candelabras; handcrafted & hand forged.



COMPASS IRONWORKS

717-442-4544; Fax: 717-442-1948
www.ironworkclassics.com
Gap, PA 17527

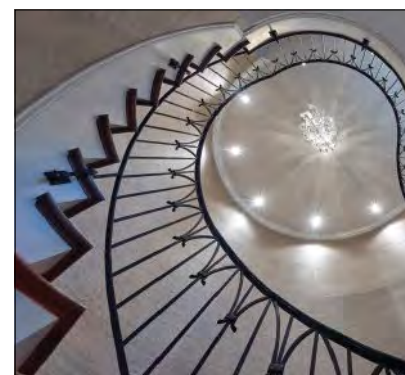
Fabricator of wrought-iron metalwork: gates, fences, railings, décor; family owned; hand crafted; historical styles; recycled content.



GODDARD MFG. CO.

785-689-4341; Fax: 785-689-4303
www.spiral-staircases.com
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HERITAGE METALWORKS

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

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HISTORICAL ARTS & CASTING

800-225-1414; Fax: 801-280-2493
www.historicalarts.com
West Jordan, UT 84081

Designer & custom fabricator of ornamental metalwork: doors, windows, hardware, stairs, balustrades, registers, fences, lighting, gutters, columns, weather-vanes, snow guards, cupolas, planters, fireplace tools & more; iron, bronze, aluminum & steel; restoration services.

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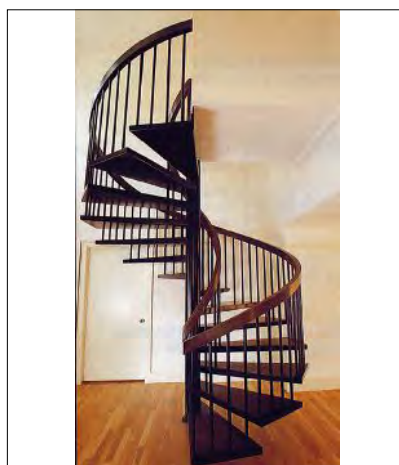


KING ARCHITECTURAL METALS

800-542-2379; Fax: 800-948-5558
www.kingmetals.com
Dallas, TX 75228

Wholesale supplier of ornamental & architectural metal components: staircases, handrails, gates, fences, furniture, mailboxes, lampposts, finials & fireplace screens; wrought iron & aluminum.

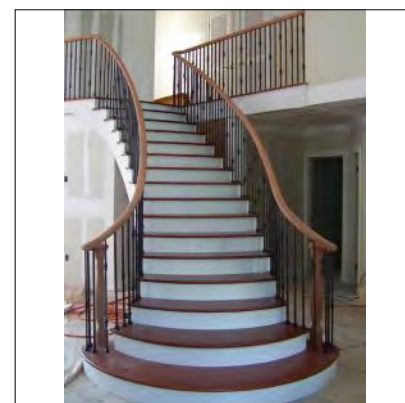
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STAIRWAYS, INC.

800-231-0793; Fax: 713-680-2571
www.stairwaysinc.com
Houston, TX 77018

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WALTON STAIR AND CABINET COMPANY

607-865-6636; Fax: 607-865-6637
www.waltonstair.com
Walton, NY 13856

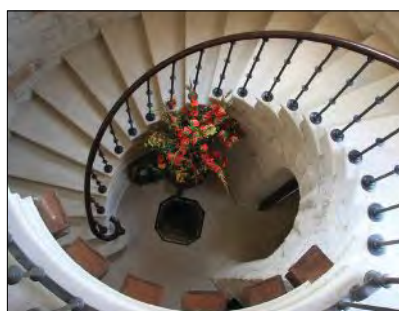
Manufacturer of custom stairs, handrail spindles & newels; tangent method handrails to create custom curves; hand-crafted cabinetry, furniture & built-ins; all hand built; no CNC machinery; works nationwide.

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BUECHEL STONE CORP.

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www.buechelstone.com

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www.continentalcutstone.com

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www.edenstone.net

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www.historicalbricks.com

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KRUKOWSKI STONE CO., INC.

800-628-0314; Fax: 715-693-7223

www.krukowskistone.com

Mosinee, WI 54455

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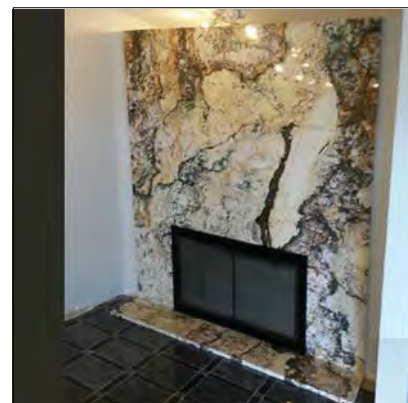
MARMIRO STONES

201-933-6461

www.marmiro.com

Carlstadt, NJ 07072

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www.montgranite.com

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Fax: 905-332-6068

www.oldworldstone.com

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610-987-6226; Fax: 610-987-9779

www.rollrock.com

Boyertown, PA 19512

Quarrier and distributor of natural building and landscaping stone. Large inventory includes wallstone, flagstone, boulders, decorative gravel, and specialty products.

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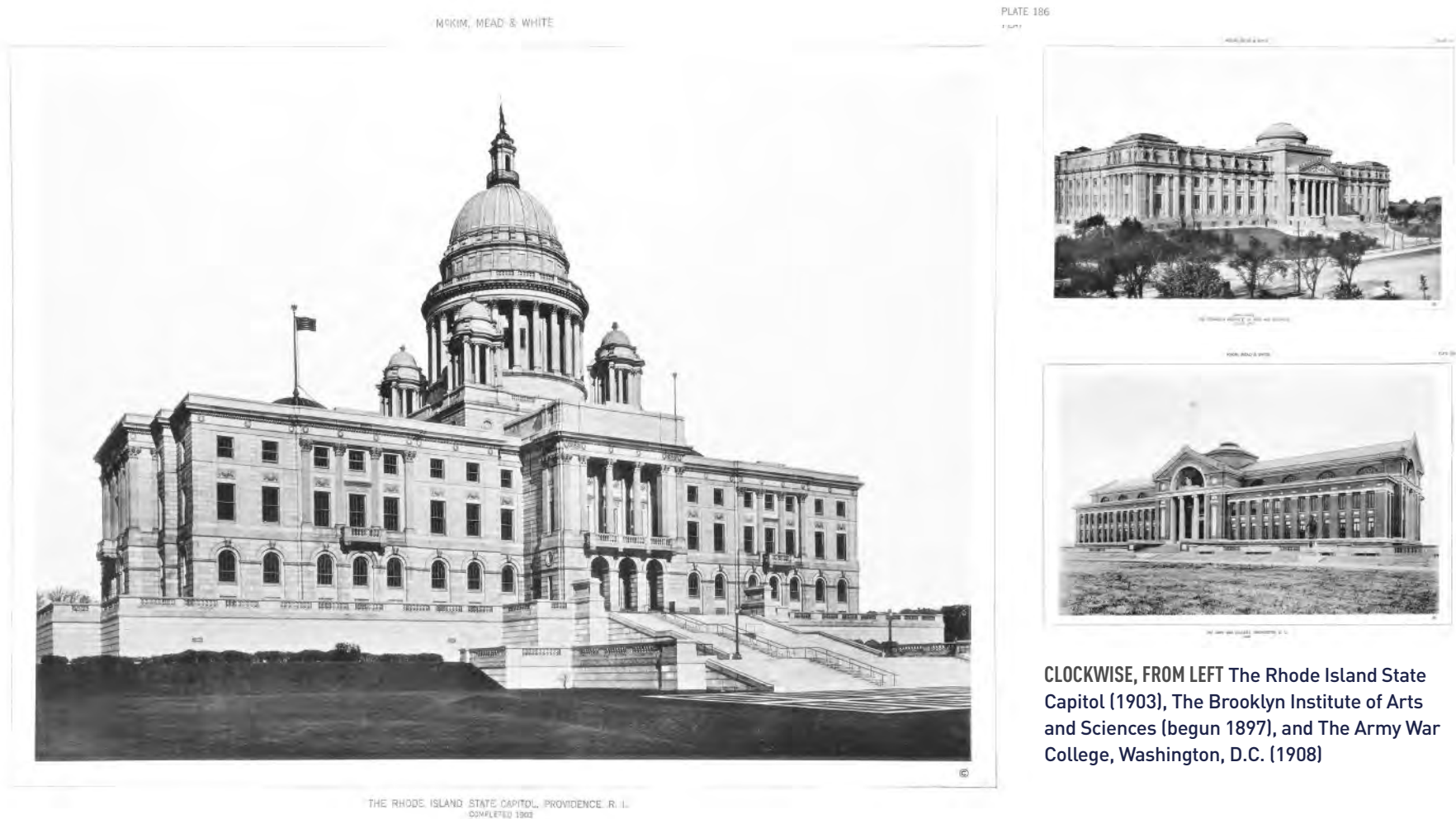
Old World Stone is a custom fabricator of dimensional cut stone for new and restoration work. For over 30 years, we have supplied property owners, masonry contractors and design professionals. Our work with limestone, sandstone and marble is unparalleled. We utilize leading edge 3-D scanning and robotic milling to complement our skills as Old World craftsmen.



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McKim, Mead & White Reborn



McKim, Mead & White: Selected Works 1879-1915

Introduction by Richard Guy Wilson; Essay by Leland Roth

Princeton Architectural Press in association with the Institute of Classical Architecture & Art, 2018

428 pages, Hardcover, \$100

WHEN THE FIRST VOLUME OF *Monograph of the Work of McKim, Mead & White, 1879-1915* appeared in 1915, it soon became a major influence on the direction of American architecture. Long out of print, the original four folio volumes now cost well over \$1,000 on the rare book market (and finding a complete set is nearly impossible).

That's why traditionalist architects are hailing the recent publication of *McKim, Mead & White, Selected Works 1879-1915*. This large-format (9 in. x 12 in.) reprint edition contains all the drawings and photos from the original four volumes (400 plates in all), albeit in a reduced size from the original 20-in. folio pages.

The 1915 monograph was not a coffee-table book meant to wow a general audience. Rather, it was intended for design professionals and others seriously interested in architecture. There's no breathless prose describing each building; every plate merely carries a descriptive title, location, and date of completion, and is illustrated with black & white photos and drawings. A few of the less complex projects (e.g., "Houses on Commonwealth Ave., Boston, Mass.") are represented by a single black & white photo, while major projects (e.g., Boston Public Library) are delineated with multiple photos and drawings showing elevations, plans, and architectural details. Each drawing includes a

scale enabling serious readers to determine as-built sizes and proportions.

Most of the 160 commissions shown are executed in the firm's signature classical style, although some plates illustrate the firm's dexterity with any historically inspired mode when appropriate. Introductory essays by Richard Guy Wilson and Leland Roth provide informative overviews of the firm's history and its enduring impact deep into the 20th century—especially as a training ground for young architects who went on to create such landmarks as the New York Public Library, Grand Central Station, the Lincoln Memorial, and U.S. Supreme Court.

In 1924, Charles Herbert Reilly, director of the School of Architecture at the Univ. of Liverpool wrote: "The work of McKim, Mead & White sums up the finest aspirations of a great people at a great epoch." Today, the work displayed in this monograph can still inspire anyone wishing to create a more harmonious and humane built environment.

CLEM LABINE is the founder of *Old House Journal*, *Traditional Building*, and *Period Homes*. His interest in preservation stemmed from his purchase and restoration of an 1883 brownstone in the Park Slope section of Brooklyn, NY.



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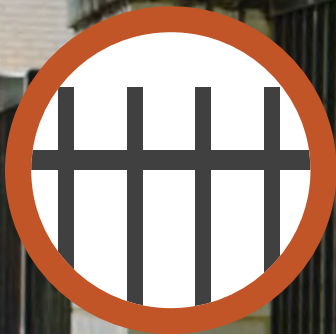
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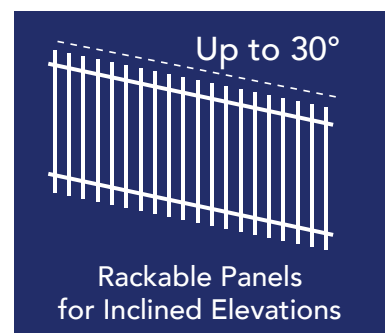
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