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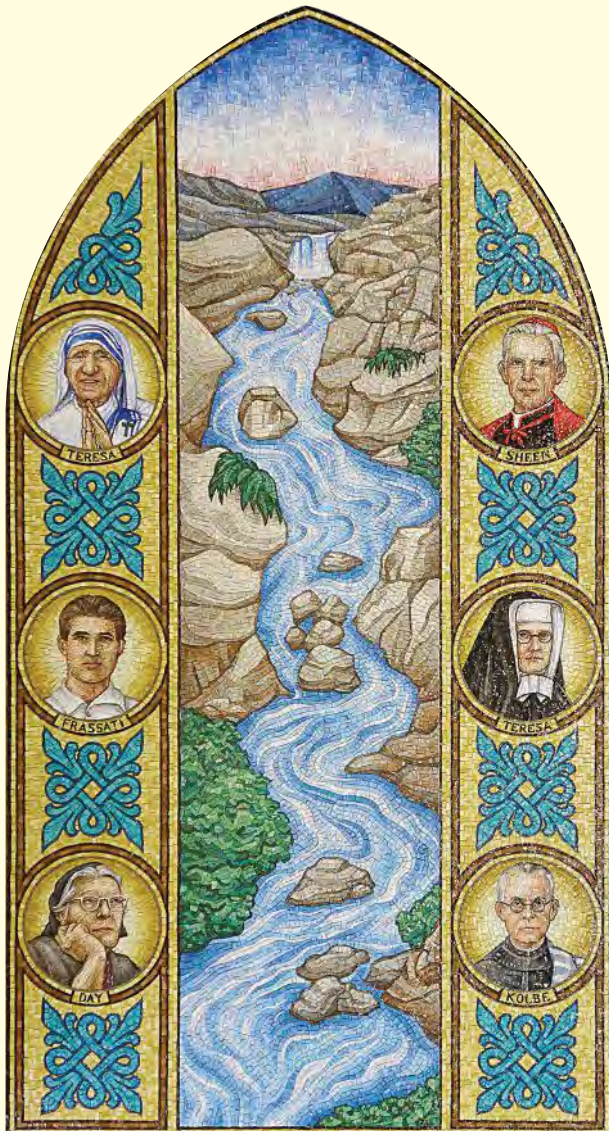
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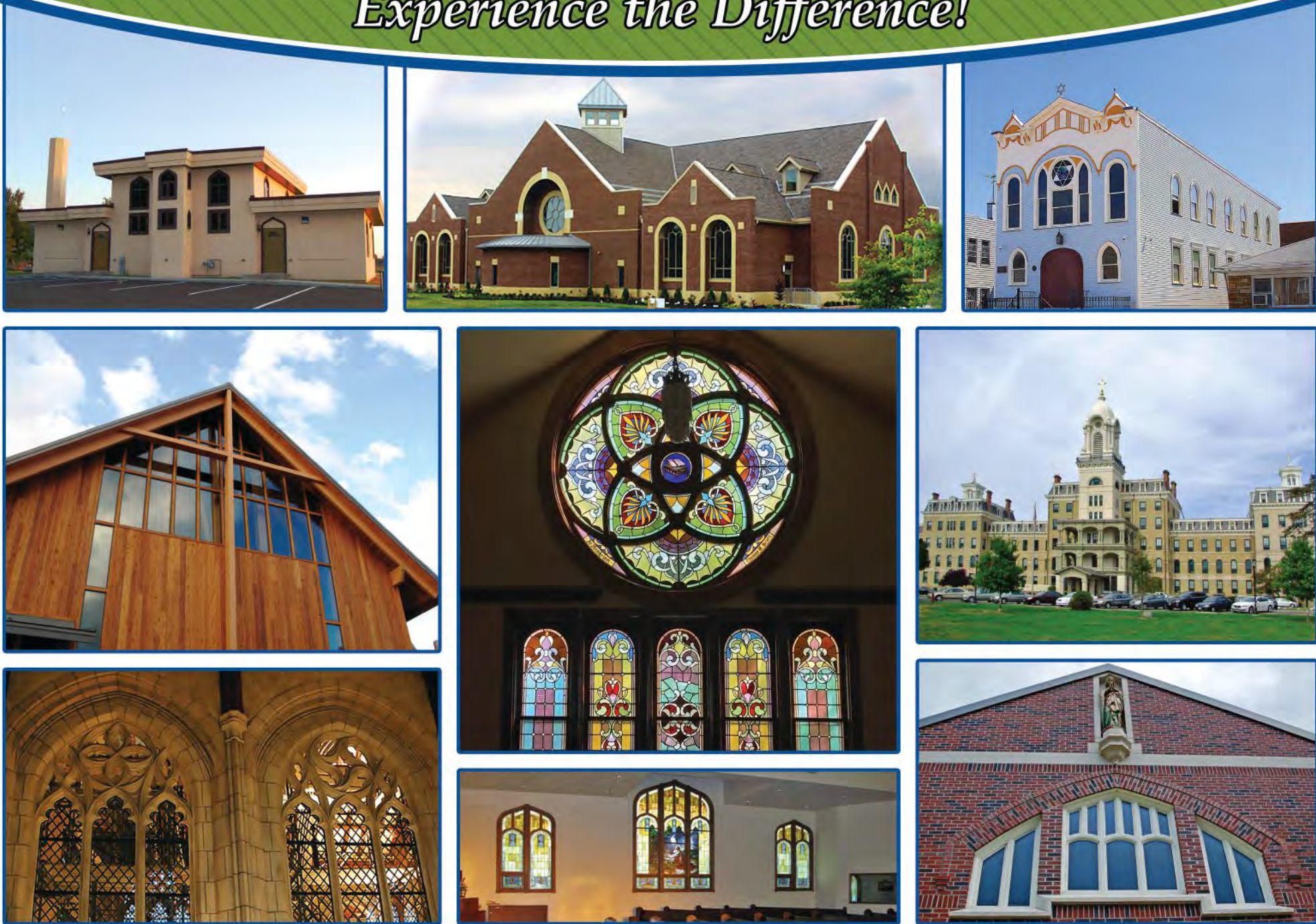
Holy Name of Jesus Cathedral
in Raleigh, North Carolina,
by O'Brien & Keane.

See more on page 32.

Photo by Alan Karchmer

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Subscriptions & Subscriber Service: 800-548-0193
Traditional Building, P.O. Box 3000, Denville, NJ 07834-9965

Traditional Building (ISSN # 0898-0284) is published
bi-monthly by Active Interest Media,
5720 Flatiron Parkway, Boulder, CO 80301.

Subscription rate to professionals in architecture, interior design,
construction and landscape design in the U.S. and possessions:
\$24.95/yr. (6 issues). Not available outside the U.S. postal system.

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2019 PALLADIO AWARDS CALL FOR ENTRIES

It's time to start preparing your Palladio entries for the 2019 competition, the 18th year for the annual awards program. **The deadline is January 11, 2019.** Produced by Active Interest Media, publisher of *Traditional Building* magazine, Period-Homes.com, and organizers of the Traditional Building Conference, this is the only national awards program that honors traditional design and construction.

Awards are given in a number of categories. Restoration & Renovation and Adaptive Reuse and/or Sympathetic Addition are honored in both the residential and commercial/institutional categories. Also in commercial is New Design & Construction, more than 30,000 sf and New Design & Construction, less than 30,000 sf. In residential, the comparable categories are New Design & Construction, more than 5,000 sf, and New Design & Construction, less than 5,000 sf.

A residential award is also given for Multi-Unit Design and for Exterior Spaces: Gardens & Landscapes. A commercial award is also given for Public Spaces, and this year, two new categories have been added: Craftsmanship & Interior Design.

SEE PAGE 58 FOR DETAILS.

New Partnership Between Design Furniture Holdings Inc. & Robert A.M. Stern Architects

Design Furniture Holdings Inc (DFH), the luxury custom furniture manufacturer of the Ferrell Mittman and Avery Boardman brands, is pleased to announce a new licensing agreement with Robert A.M. Stern Architects of New York. Robert A.M. Stern Architects' contemporary interpretations of traditional forms are the perfect complement to DFH's commitment to craftsmanship and customization. Two collections are expected to debut in 2019.

CONTRIBUTORS



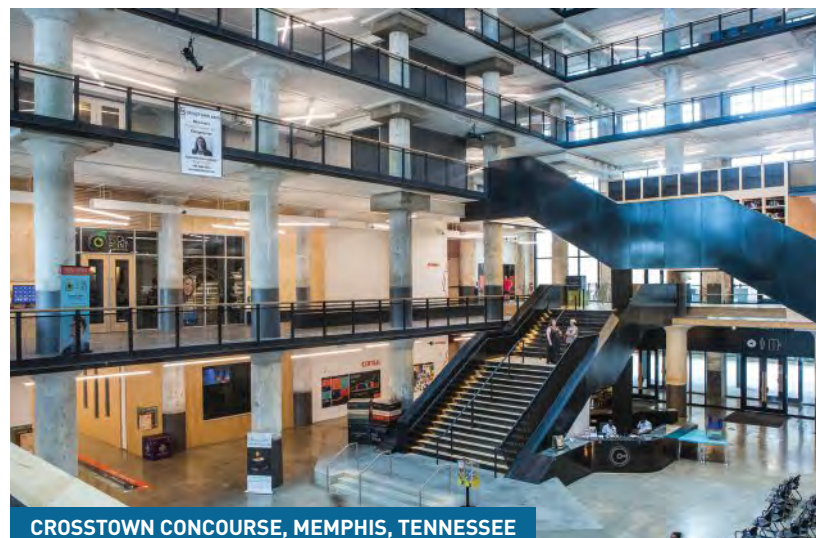
ERIK EVENS is a lifelong resident of California, born and raised in Los Angeles. He is the principal of Evens Architects, an independent design studio operating under the aegis of the KAA Design Group, focused exclusively on traditional residential design. His work has been published in a wide array of publications, including *Architectural Digest*, *House Beautiful* and *Western Interiors*. He is a teacher and a national Fellow of the Institute of Classical Architecture & Art.



JUDY L. HAYWARD is executive director of Historic Windsor, Inc. and the Preservation Education Institute. She serves as education director for the Traditional Building Conferences Series and Online Education. She blogs and writes a column regularly for *Traditional Building*. Judy joined the adjunct faculty in 2018 at Kennebec Valley Community College in Maine to teach New England Architectural Styles and Building Construction online. She specializes in the development of educational programs for builders, architects and tradespeople.

National Preservation Awards Jury Announce 2018 Winners

After reviewing more than 50 potential candidates nominated across the country, the 2018 jury for the National Trust for Historic Preservation's Richard H. Driehaus Foundation National Preservation Awards has chosen three award winners to be honored. The Awards celebrate the best of the best in historic preservation, adaptive reuse, and the re-imagining of historic buildings for the future.



CROSTOWN CONCOURSE, MEMPHIS, TENNESSEE

Photo by Sélavie Photography



THE DOUGLASS AT PAGE WOODSON, OKLAHOMA CITY, OKLAHOMA

Photo by Justin Clemons Photography



RICHARDSON OLMSTED CAMPUS, BUFFALO, NEW YORK

Photo by Scott Gable Photography

HGA Acquires Wilson Architects

National multi-disciplinary design firm HGA acquired Wilson Architects, a prominent architecture firm specializing in science and technology facilities for higher education and corporate clients. Boston-based Wilson Architects will now be known as Wilson HGA.

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Collaborative Collections

Interior designer Thomas Pheasant has been designing celebrated home furnishings for more than 15 years.



THOMAS PHEASANT

Thomas Pheasant, a celebrated interior designer who also creates furniture, focuses on residential and commercial projects throughout the United States, Europe, and Asia. Known for his modern vision of classical design, Pheasant has received the Andrew Martin Interior Designer of the Year Award, the John Russell Pope Award given by the Institute of Classical Architecture, and the 2016 Design Icon Award for his contributions to the design industry. He also was recognized as a Dean of American Design by *Architectural Digest*.

His furniture collections include the Thomas Pheasant Collection for Baker

Furniture, Thomas Pheasant Collection for McGuire, and his own collection of limited edition and unique pieces, Thomas Pheasant STUDIO. The author of *Simply Serene: The New Luxury for Modern Interiors* (Rizzoli), Pheasant has homes in Washington, D.C., and Paris.

1 Your collaborations with furniture companies such as Baker have resulted in classically beautiful pieces. How did the collaboration with Baker come about? In 2001 Baker approached me about creating a collection focusing on a new look for classical furniture. They had seen my interior work in *Architectural Digest* and liked that I understood the needs of residential projects combined with the fact that I designed furniture for many of my projects. We launched my first collection in 2002 and recently launched my fifth Baker collection in 2018.

2 Do you have any tips for how to build a brand for a venture into furniture design? I believe it is important to create a clear design vocabulary if you are interested in venturing into furniture design. This is essential if you want to create furniture that reflects your personal point of view. While my inspirations are



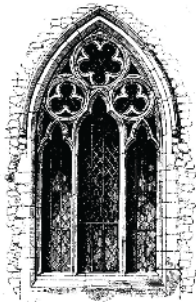
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My personal philosophy in design is that a well-developed vocabulary is just a foundation and that design should be a constant evolution and expression of current thoughts and ideas channeled through that foundation. — THOMAS PHEASANT



ever changing, my process for designing interiors and furniture are exactly the same. How I evolve my design work and how I interpret the world around me is distinctively through my own filter or process.

3 Do you have any new collections debuting soon? Can you share your overall design philosophy? After launching my most recent Thomas Pheasant Collection for Baker, I began developing new pieces for my own in-house Thomas Pheasant STUDIO Collection.

My personal philosophy in design is that a well-developed vocabulary is just a foundation and that design should be a constant evolution and expression of current thoughts and ideas channeled through that foundation. I believe that as a creative person it is important to constantly seek inspiration and take yourself outside your office and keep a fresh eye on the world around you.

4 Furniture has undergone countless iterations since people began building furniture some 30,000 years ago.

What do you think constitutes “good furniture” in today’s world? Beyond the subjective aesthetic judgment on what is “beautiful,” the quality of materials and construction can really define the idea of “good furniture.” Our culture is changing rapidly, and the idea of fast delivery and “good enough for now” have become ideas that are much too frequently accepted. I do believe that there is a growing interest in quality and value for the long term. I love the idea of getting back to curating our homes with beautiful pieces that are selected over

time and gradually help us express who we are now and where we have been.

5 Finally, a fantasy question: Elon Musk, owner of SpaceX, is talking about a crewed flight to Mars within the next decade or two, with an eye toward colonization. If you could design one piece of furniture for a habitat on Mars, what would it look like? It would be the Cleo Chaise from my new Baker Collection. A sculptural cloud, the Cleo Chaise puts you in just the right position for celestial viewing or simply dreaming.

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Clean, Dry, Sound, Dull

The four steps
for a successful
paint project.



Regardless of your role in traditional building, probably every painter you have ever worked with or for has told you that success or failure for any painting job really comes down to good surface preparation. But just what does that really mean?

Charles Gilley, Charles Gilley Restoration Painting, in South Woodstock, Vermont, describes the conditions he needs to paint any substrate confidently: clean, dry, sound, and dull.

CLEAN

Gilley describes a clean surface as “one that has removed any barrier between the substrate and the coating.” Examples include removing grease in kitchens, body oils from fingerprints and dirt that can accumulate anywhere. Interiors require hand-washing with a mild soap, water, and a good rinse. He avoids pres-

sure washing and uses a garden hose for exteriors. Power washers run the risk of saturating the wood with moisture and that brings us to the next condition to be achieved, dryness.

DRY

A dry wooden substrate should have less than 15 percent moisture content. Gilley prefers not to exceed 12 percent. Duffy Hoffman, of Hoffman Painting and Restoration in Forest Park, Illinois, says that he finds a range of 10 to 15 percent works well with most coatings. Both feel that a moisture meter is an essential tool and the best insurance to confirm whether wood is dry enough to accept paint.

Mario Guertin, of Painting in Partnership, Inc, Palatine, Illinois, notes that a clean and dry surface is just as important for metal substrates. His

Chicago-area firm paints many multi-story townhouses with metal cornices and bay and oriel windows from the period of 1880-1920. He worked “on the historical restoration of the façade of one of the three adjacent brownstone houses Potter Palmer had built for his three daughters in the late nineteenth century on Chicago’s Gold Coast area. The project involved the complete rebuilding of the metal two-story bay window, cornice and slate roof elements. All the metal surfaces were faithfully recreated using galvanized steel, that needed high-gloss black paint. The manufacturing process for galvanized steel leaves the surface of the steel coated with a thin oily film. It is essential to remove that oily substance before any primer or coating can be applied. To do the job properly, we used lacquer thinner, scrub pads and rags to clean the metal surfaces. Using a scrub

pad really helps to loosen the oily film and rags finish up the job.” Guertin’s blog is full of excellent tips for preservation professionals.

SOUND

Soundness usually applies to recoating a surface that has been in service for a while. “There should be nothing loose; in other words, no peeling, lifting or bubbles,” say Gilley. There are many methods of paint removal, and it is best to work with a professional painter for guidance on the best method for the job. Hoffman prefers infrared heaters and a new tool, the Speedheater Cobra available from Eco-Strip, which enables him to do work in small areas or on delicate window details. Gilley really likes the Festool line of tools for paint removal because he needs good, reliable dust collection during paint removal.



Words of advice for the younger generation thinking about a career in the painting trade

All three of the painters interviewed for this article are committed to their own continuing education and helping others to learn. Charlie Gilley teaches for the PDCA and the Preservation Education Institute, Historic Windsor, Inc., in Vermont. He encourages young people to seek out trade and vocational education at schools and colleges throughout the US. Mario Guertin encourages those new to the craft to join PDCA and to “surround themselves with talented and experienced professionals” who are willing to teach. Duffy Hoffman lectures and demonstrates at the Traditional Building Conference and in partnership with many preservation groups throughout the United States as well.

Painting & Decorating Contractors Assoc.

Both Charlie Gilley and Mario Guertin are members of the Painting and Decorating Contractors Association, pdca.org. Each of them has been active in the development of craftsmanship technical training for the nonprofit trade association. The 120-year-old association has over 2,000 professional members and offers podcasts, discussion groups, national and regional training, and peer-to-peer advice. Gilley and Guertin both mention that they give as much as they receive by having a network of peers from whom they can learn and share. Mario mentioned that he shared some concerns he had about a particular technique for some doors on which he was working, and that a fellow PDCA member not only coached him but made a video of the process and sent it to him.

Contact Information

Charles Gilley cbgpainting@gmail.com

Mario Guertin paintpartner.com

Duffy Hoffman sashmasterduffy.com

Depending on the project, lead-safe work practices may be required. Visit epa.gov for information about Federal laws and State health departments for statutes that may apply in state and local jurisdictions. Anyone working on buildings constructed prior to 1978, should take a Lead RRP course to learn about lead hazards and working safely.

DULL

The surface should be dull or smooth, but it needs what painters call “tooth” according to both Hoffmann and Gilley. This involves putting some profile in the substrate so that the coating bonds or adheres to it.

OTHER KEYS TO SUCCESS

Gilley cautions that one can’t assume that every coating works in every situation. “Never assume that it

does.” You may be working with oil or water-based paints, an acrylic finish, or something with urethane in it. And that brings us to the next bit of critical advice: Read product information materials whether found on the can, technical data from a manufacturer, or in a materials safety data sheet. This might be the fifth step and the second-best bit of insurance beyond the moisture meter to insure a good paint job. Get to know the technical people who work with the manufacturers of the products you use. Ask questions and give them feedback. This is an important step whether you are a painter, contractor, architect, interior designer, facilities manager, or owner. Good technical people want to help you and they benefit from your on-the-jobsite experience. Hoffman stresses that the primer and finish coating should be made by

the same manufacturer.

A sixth ingredient in painting success clearly revolves around good communication. Charlie says that the golden rule, “do unto others as you would have done to you” applies on the painting job site just as it does in all areas of life. Since painters are usually the last craft on the job, they are often tasked with cleaning messes and fixing problems left behind by others. He encourages other trades on the job to think about the next trade coming to the project.

Duffy stresses the need for good specifications. He encourages architects and interior designers to work with trusted painters to develop good specifications. He believes the communication process that leads to good specs results in better work.

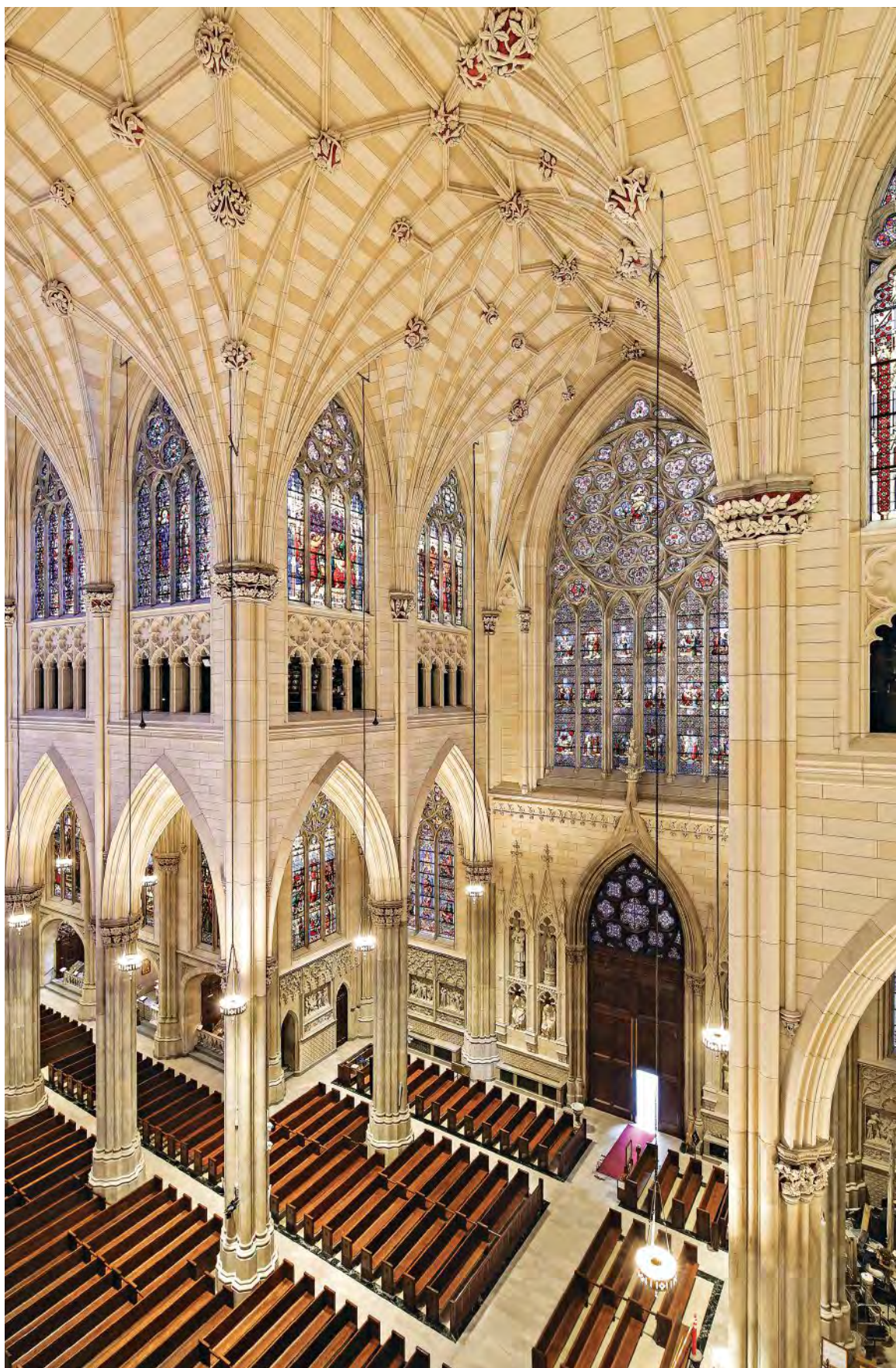
Mario says to consider the neighborhood, the neighbors, and responsi-

bilities to paint and work safely. “Old buildings in a big city like Chicago are often situated right next or close to the sidewalk and very close to the neighbors. Consequently, gaining access to the surfaces to be worked on can also require the renting of special equipment like a canopy, scaffolding, boom, and the procurement of all the required permits. On a recent paint restoration project, the rental and permit costs alone exceeded \$10,000.” He usually works on projects that must comply with RRP standards for lead removal.

Mario Guertin sums it up well, “If you are the owner of such a building, how long would you like the paint job to last? I would say as long as possible! This means that, as a house painting contractor, I must ensure that our surface preparation is as thorough as possible.”

Handle with Care

Steps to take when restoring historical stained glass.



Stained glass is typically an assemblage of colored glass pieces that form a pattern held together by lead strips called comes. Comes are reinforced by steel to support the weight of the glass. The term leaded glass indicates noncolored glass, which is similarly assembled. Stained glass has many roles in architecture: It is a decoration, it provides light to the room, and it keeps out rain and wind. As a result, its design is part science and part art, as is its conservation and restoration. While a layperson can perform minor maintenance to extend the life of stained glass, repairs should be undertaken by a professional.

History. Egyptians likely were the first to produce colored glass, in the form of beads dating to 2,700 BC. Stained glass windows were found in Roman houses dating to the first century AD. The earliest documented pictorial stained glass is a head of Christ in the German Lorsch Abbey from 10th century AD. Stained glass was at its zenith in gothic architecture, but between the Renaissance and the mid-19th century, the change in religious sentiment associated with the Protestant revolution resulted in stained glass windows falling out of fashion.

In North America, glass was fabricated in Jamestown by 1607. Eventually stained-glass studios set up shop for both custom and stock designs. Churches frequently installed temporary glazing (plain or stenciled glass, but leaded) which served to complete the building enclosure until the parish had funds to install more intricate windows. While new stained-glass windows today may be of traditional or nontraditional design, they are fabricated in the same manner as historical windows.

Five types of stained glass are typically found in North America:

- **Traditional stained glass**, which involves applying vitreous paint, stain, or enamel and firing it onto glass to depict scenes. (See Figure 1)
- **Stenciled glass**, in which colored materials are applied repetitively with stencils across many panes. The glass is typically very thin and frequently with inconsistent firing, resulting in difficulties repairing it. (See Figure 2)
- **Cathedral glass**, which is colored antique glass that is machine rolled and sometimes has a pattern pressed into it. (See Figure 3)
- **Opalescent glass**, which includes milky-white glass mixed into it for translucency and is sometimes iridescent. (See Figure 4)
- **Plated glass**—a North American stained glass—which sandwiches different glass together (opal-

LEFT: Whitney Cox photo; OPPOSITE: Photos courtesy of Susan D. Turner



FIGURE 1

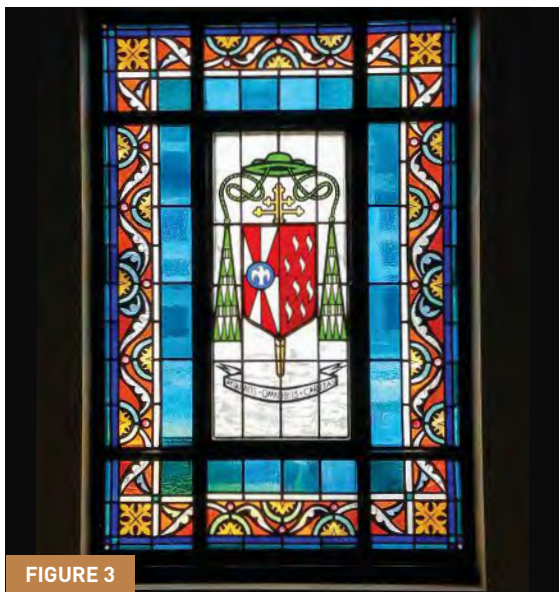


FIGURE 3

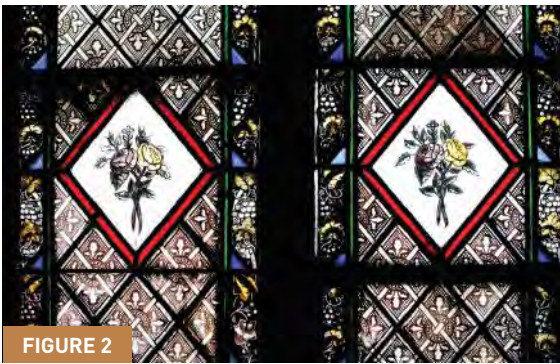


FIGURE 2

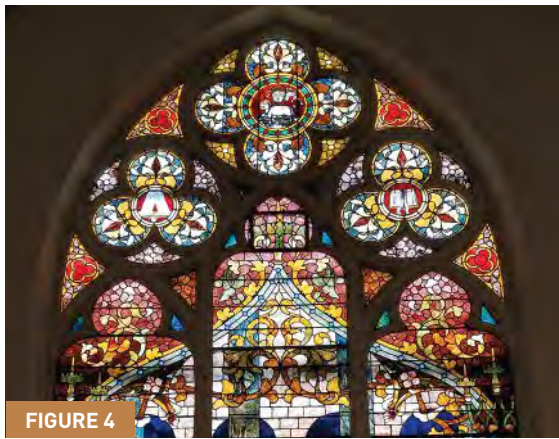


FIGURE 4



FIGURE 5

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escent, cathedral, and textured) in areas to achieve certain effects. John La Farge and Louis Comfort Tiffany both patented methods of plated glass achieved by sandwiching. (See Figure 5)

Installation. Stained glass is set in pieces into lead cames, which edge each piece. These are in turn soldered together, to form a reinforcing web that holds the glass in the designed pattern. Cement is applied to the cames to keep the joint watertight. The cames are

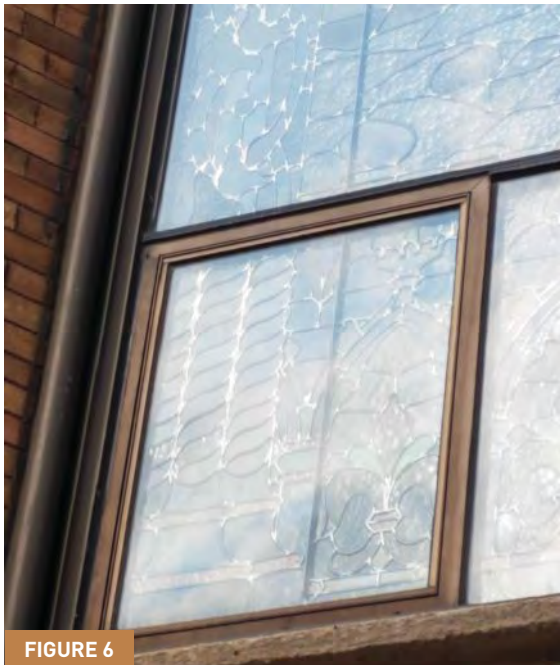


FIGURE 6

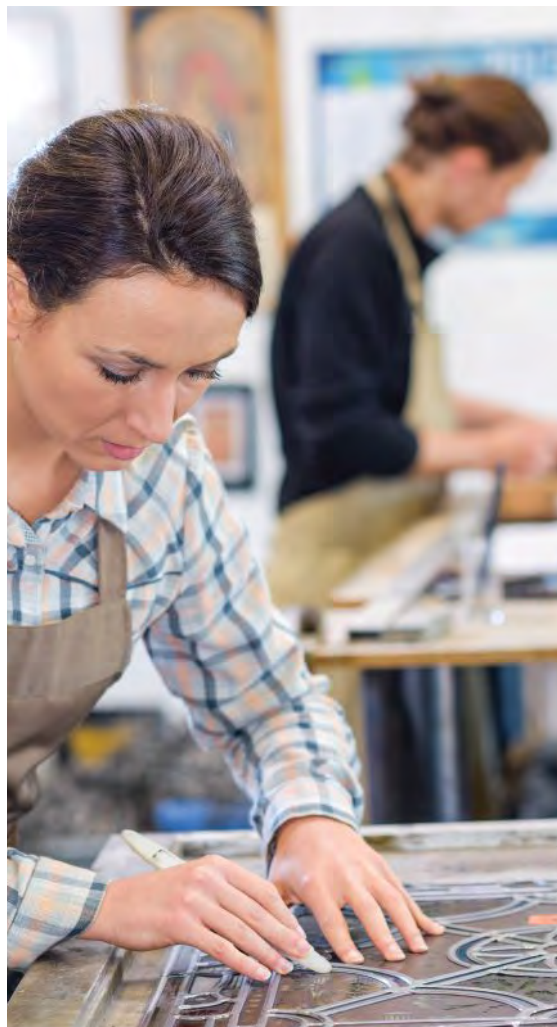
attached to reinforcing rods with tie wires, which assist in keeping the lead stiff and support the weight of the glass. This assembly sits in a window frame of wood, steel, terracotta, or stone, and protects the interior from weather, lets in light, and, when operating portions are utilized, permits the passage of fresh air. (See Figure 6)

Assessment. Knowing the date of your window will help with its treatment and assessing its valuation. For tips and techniques of dating a window, see *Preservation brief 33: The Preservation and Repair of Historic Stained and Leaded Glass*.

Examine the window for the types of deterioration listed below. Annotate the deterioration on dimensioned drawings. Indicate the intended scope of repair along with quantities to ensure consistent bidding. If the scope includes removing the window for wholesale releading, require that tracings/rubbings be prepared prior to removal.

The types of conditions or deterioration that should be observed and noted are:

- **Sagging or bulging panels.** This is usually caused by the weight of the glass lacking adequate support or being exposed to high heat. When examining this condition, observe if there are damaged, cracked or broken areas of glass, which will require repair as described below.
- **Broken or loose wire ties** can be caused by aging or by the above-mentioned bulging. This may require the introduction of additional wires or perhaps additional reinforcing rods.
- **Examine the cames.** If they have become stretched, the glass may be coming out of the cames, or there may be gaps at the panel edges showing daylight. Other symptoms may be a white powdery look (oxi-



dation) on the lead cames or lead “fatigue,” evident as tears or cracks (particularly near the solder joints).

- **Rattling panels, or water or air infiltration,** indicate a failure of the waterproofing, which also can have symptoms of stained or wet sills.
- **Check for loose or missing perimeter putty** that holds the glass in the sash.
- **Look for loose or flaking painted areas** of the glass (not to be mistaken for dirt). These unstable areas require restoration by a professional.

Repair. As with all historic preservation, first do no harm. Maintenance can be done by a layperson, but an experienced craftsman is recommended for any of the listed repairs.

Maintenance. Have perimeter sealant of the window frame replaced every 10 to 15 years. This vital seal protects the joint from water exposure. Maintaining the paint film is also important to ensure that water doesn’t affect the substrate, preventing deterioration.

Maintain cement around the cames to ensure that water is kept out of the window’s crevices. If water sits anywhere, it will freeze and expand, causing more damage to the window.

Maintain hardware with lubricant and cleaning for proper operation and to prevent racking of the window frame.

Regular cleaning of the window should be done with appropriate cleaning solutions. Do not use any products containing ammonia, acid (including vinegar), solvents, or anything caustic or abrasive (like bathroom cleansers). Likewise, steam or pressurized air are too aggressive for stained glass and will result in damage to the glass or cames.

When to seek a professional repair person.

When windows sag, a professional can determine where to install additional reinforcing bars or additional ties to support a window, without detracting from the original design. It is not possible to “flatten” large bulges since it puts the glass at risk of breakage. Not only has the lead stretched to cause the bulge or sag, but the assemblage has increased in size and likely won’t fit back into the frame. At this point, full releading is required. The window is traced and the lead cames measured to create a permanent record. The window is removed from the opening and taken to a shop where the individual pieces are removed from the cames and reassembled with new matching lead and reinforcing rods.

To repair cracked glass, epoxy glue can be applied to the edge of the glass. If a more flexible repair is needed to accommodate ongoing movement, a technique in which copper foil is folded over the edge of the glass and soldered can be used. In the case of badly damaged or missing glass, replacement glass can be sourced. When matching colored textured glass is not available, it is possible to use two layers of glass, one for texture and one for color, rather than installing a poorly matched piece that would be visible.

Where there is isolated separation of the cames, selective resoldering of separated joints is possible. If the glass is loose in the came, new cement can be worked into the joints to provide a weathertight joint. Sealant should not be used for this application.

In some cases, stained glass paint may be unstable or flaking. Stabilization of the paint should be restricted to professionals. There are many possible techniques included in the final link below.

What not to do. A common practice to protect stained glass from vandalism or weathering is to cover it with a plastic or glass storm window. This needs to be carefully considered. Done improperly, this can lead to premature failure of the lead cames due to overheating or rotting of the frames from condensation. Any cover design must be properly vented at the head and have drainage at the sill. Use calculations to determine if condensation could occur on the glass. The design must also reflect the mullion and muntin layout of the original window, or it will mar the appearance of the window.

Stained glass is a valuable and complicated asset. For the best long-term results, repairs should be made only after threats to the window (such as a leaky roof or crumbling masonry) are repaired.

Resources:

Standards and Guidelines for the Preservation of Stained (and Leaded) Glass Windows, C. 2012 Stained Glass Association of America

nps.gov/tps/how-to-preserve/briefs/33-stained-leaded-glass.htm
stainedglass.org

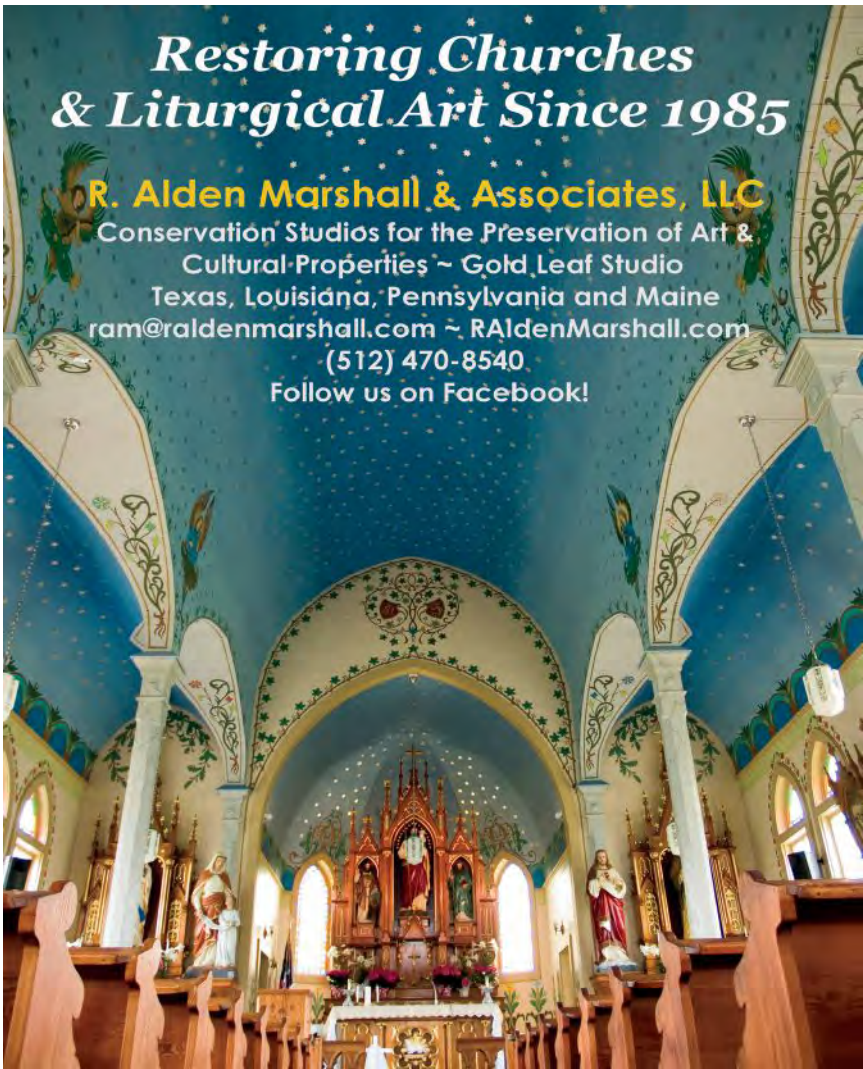
churchwindowrestoration.com/why

With thanks to Emily Carson of Solstice Stained Glass for her technical input.

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

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Custom Crafts

B&D Builders uses traditional practices in its millwork shop.



B&D Builders was born out of a longstanding friendship between Ben Esh and Daniel Glick. The two met as teenagers working for the same small construction shop, where they hammered together backyard storage sheds and pole barns. Their career paths took a turn toward timber frame construction when their work caught the eye of John and Leslie Malone, the largest individual landowners in the United States and a couple with a passion for horses and equestrian facilities. Their first official project was Riveredge, a world-class equestrian facility in Chesapeake City, Maryland.

Today, B&D Builders—along with sister companies Mid-Atlantic Timber Frames, Vintage Homes and Millwork, and Mid-Atlantic Steel Fabrication—is a leading design-build company. Mid-At-

lantic Timber Frames focuses on sourcing quality timbers for residential and commercial properties, while Vintage Homes & Millwork constructs custom homes and custom-crafted wood doors. Mid-Atlantic Steel Fabrication is a full-service metal fabricator providing laser cutting, CNC forming, welding, powder coating, countersinking, and more.

The family of specialized companies offers a team of skilled custom builders, designers, millworkers, project managers, timber suppliers, and fabricators expert in the use of quality materials and time-tested construction practices such as mortise and tenon. All four companies are managed out of their parent facility in Paradise, Pennsylvania.

“Our growth has been deliberate,” says Ben Esh. “We added the companies we need to do our job well, which also

allows us to keep strict control of the materials, construction process, and finishing details.” B&D has come a long way since its first job in 2008. Today the company stamp is on residential homes, restaurants, and office spaces built in the same mortise-and-tenon timber frame style.

Ben and Daniel attribute their successful evolution to a simple craftsman’s creed: Build it right, or don’t build it. Early on, B&D Builders established a reputation for finishing projects on time and on budget. It wasn’t long before a bedrock of traditional bank barns became orders for horse barns, sprawling equine facilities, and full-scale riding arenas, as well as high-end timber frame homes.

Their old-world craftsmanship proved valuable for preservation and

restoration projects as well, from Greenwich, Connecticut, to Middleburg, Virginia. They hammered new life into early 19th-century barns by repointing stone walls, replacing roofs, and styling historic doors, often recycling reclaimed wood and comely old barn beams into other projects. One notable project is the recently completed reconstruction of the historic Star Barn Village, now located at Stone Gables Estates in Elizabethtown, Pennsylvania.

Even as their business grows, Esh and Glick remain stalwarts for quality work made to last, blending handmade millwork with modern technology. Inside their Lancaster County facility, which serves as a showroom, is the latest CNC technology and software to create computerized 3D renderings, providing layer-by-layer blueprints.

FAR LEFT Barn doors are a B&D specialty. Crafted from reclaimed white oak, these Track and Trolley doors can be opened to unite the barn and patio, creating a large indoor-outdoor area for entertaining.

MIDDLE Hand-crafted details give a personal touch to everything from hardwood to hand rails.

BELOW B&D's artisans use traditional building methods such as joining heavy timber frames with a mortise and tenon method, supported by wooden pegs and brackets, for old-world charm and durability.



B&D's Ideal Building Formula

- ▶ Posts and beams are carefully fashioned to fit seamlessly together
- ▶ Trusses assembled in shop
- ▶ Timbers are connected at the site using the mortise and tenon method
- ▶ Timber is custom-cut for individual job with CNC machine
- ▶ Natural energy efficiency of timber improved upon with SIPs (structurally insulated panels) installation
- ▶ Complete customization, turnkey service
- ▶ For reclaimed wood, Nylon Brush Machine cleans and removes raised fibers to create a rugged look with a clean feel
- ▶ Doors are designed with kiln dried, quarter-sawn wood and use engineered side stiles for durability and strength
- ▶ Use traditional building methods known for reinforcing and utilizing the strength of timber frame beams



Far Right: mkPhotography photo; All others: Courtesy of B&D Builders

Ben and Daniel credit their workers, craftsmanship, and top-of-the-line equipment for B&D's fine-honed reputation and exemplary craftsmanship. "I love seeing the results when

we combine centuries-old techniques from third-generation craftsmen with sophisticated technology," Ben Esh says. "It's an ideal formula for going forward into the future."

ABOVE Much of B&D's work services the equestrian community. This riding arena in Chesapeake City, Maryland, houses 28 hand-crafted horse stalls and features bold arching timber frames as well as large cupolas designed to fit a riding arena roof.

Using Moldings

Useful guiding principles for impactful moldings.



FIGURE 1

An architect sits at her desk, pen and sketch paper close at hand. Her task is to design the crowning moldings for large furniture piece, which will occupy a prominent location in the library of a new home she is designing. On the desk in front of her is also a book, open to a page displaying a chart, describing a varied array of different molding profiles. “Which shapes should I use?” she wonders. “In what order should they be positioned? How large should they be? How should they relate to each other?”

Many of us have experienced this. The confrontation with a blank sheet of paper can certainly be daunting but having in mind a philosophy of moldings can help us break through the creative block to create beautiful designs. In my last article, “The Purpose of Moldings,” we became familiar with some of the most important molding profiles. We also saw how moldings can be used as indicators of structural logic, and how that lens can help us see which shapes are most appropriate for particular locations. In this piece, I’d like to share a few useful guiding principles that can assist the thoughtful designer in using moldings to great effect.

BE CONSCIOUS OF PRECEDENT

Moldings are much more than decorative trim that is used to conceal intersections between surfaces. In the words of Donald Rattner, they are the “atomic units,” the elemental building blocks of the elements of classical architecture. So, the first stop in our quest for molding inspiration should be the classical orders themselves. When designing with moldings, it’s good to refer to the great treatises on the orders: Vitruvius, Palladio, Chambers, Gibbs are but a few examples. Also, books that synthesize the canonical information in a useful, easily referenced way, such as William Ware’s *American Vignola*, or Robert Adam’s *Classical Architecture*, are particularly valuable. As our architect friend begins to consider what kind of moldings should crown her cabinet piece, the orders themselves can help guide her.

SEEK CONTRAST

Moldings are almost never used individually; they are usually combined together in a series. When deciding which moldings to comprise a series, try to establish contrast between them. This contrast can be between straight and curved moldings, such as this example of a Doric entablature for a Colonial door surround, featuring alternating straight and curved molding elements (**Figure 1**). Contrast may also be established between concave and convex shapes. The Attic base

Photos and illustrations courtesy Erik Evens, AIA



FIGURE 2

of the Ionic column is a well-known example, where two exuberant, convex tori are separated by a deeply concave scotia, in this example by Palladio (**Figure 2**).

ESTABLISH A HIERARCHY

The strategy of creating visual contrast between moldings leads us to another important method for creating lively assemblages of moldings: Strive to create a hierarchy. Always establish certain moldings as dominant, allowing other moldings to be subservient to them. If all the moldings are the same size, they compete for our interest, and create a crowded or agitated visual effect.

It's a much better strategy to look to one molding to be larger, more assertive, to dominate the composition, and to use the smaller surrounding moldings to provide contrast, and to define the boundaries of the larger shape. In this example of an interior crowning molding (**Figure 3**), the larger Cyma Recta is dominant. It is punctuated by small fillets, which delineate its boundaries. The ovolo bed molding underneath supports the larger molding above and is subservient to it.

COORDINATE MOLDINGS RIGOROUSLY

The elements of classical architecture relate to each other in a rigorous manner, usually by establishing definable, repeatable geometric alignments. Moldings,

CROWN MOLDING

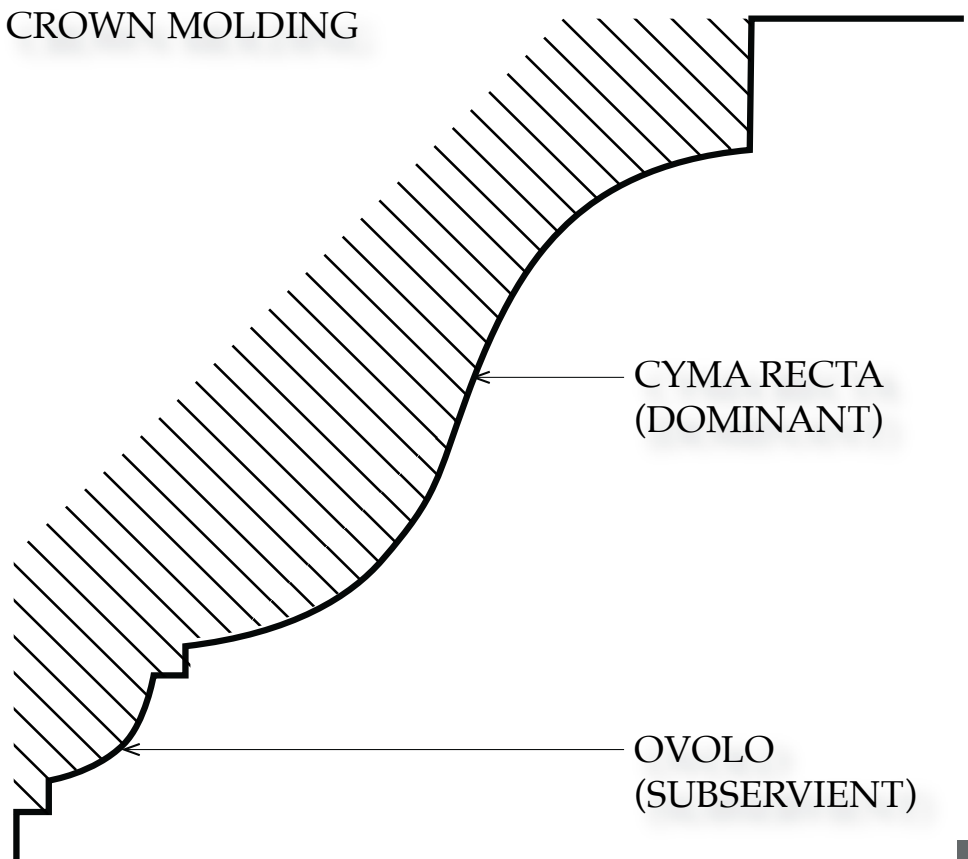


FIGURE 3

BASE MOLDINGS DORIC COLUMN

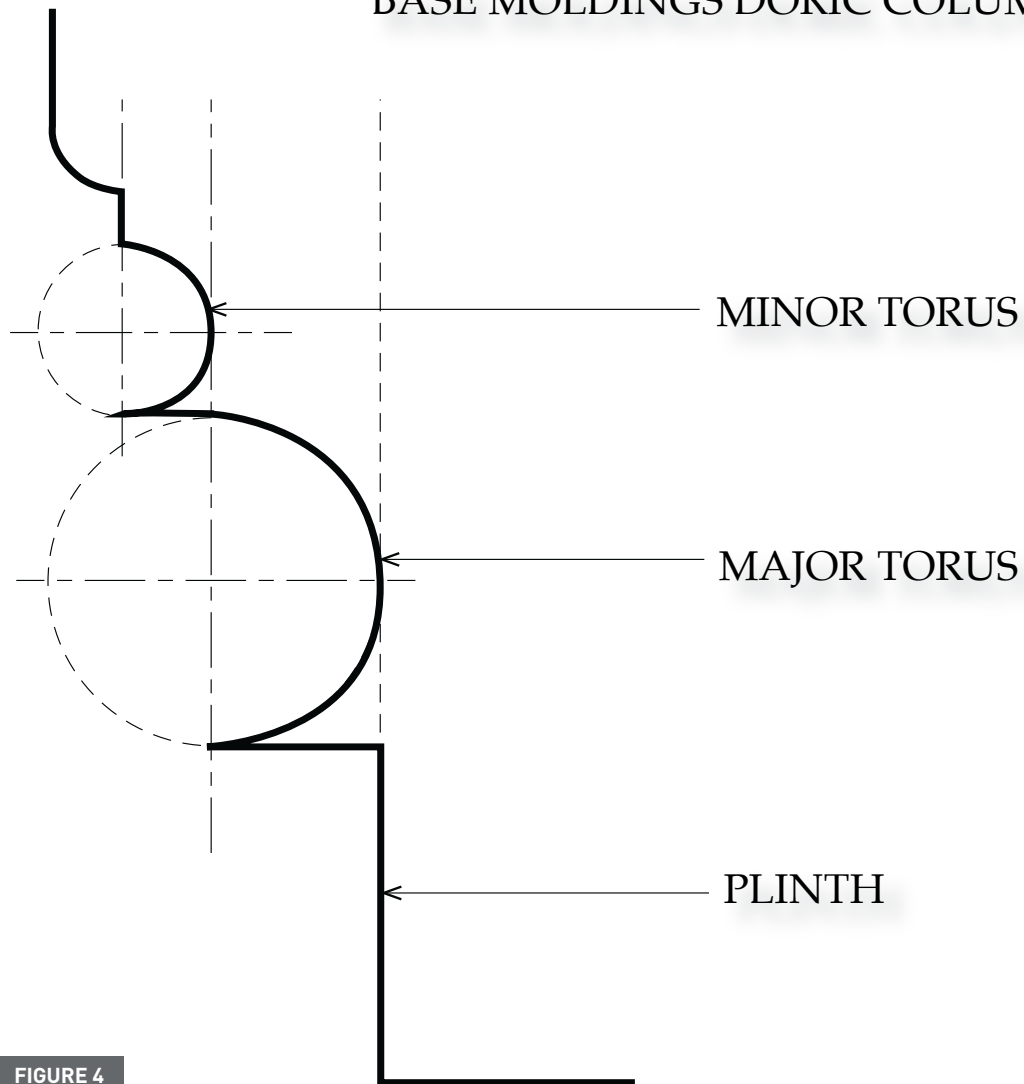


FIGURE 4

the smallest components of the architecture, should do the same. When designing assemblages of moldings, position them so they relate to each other in a rational manner. This kind of geometric clarity imparts a crispness and legibility, which is readily discernible by the observer.

For a straightforward example, consider the base moldings of the Doric column (**Figure 4**). The major torus is set over the plinth, so that the curve of the torus is tangent to the extension of the vertical face of the plinth. Above the major torus is a smaller minor torus, which is itself tangent to a line extended upward from the geometric center of the major torus. And so on.

Another important way that moldings coordinate with each other is by observing a facial angle. The facial angle is the angle at which molding groups extend from the prevailing surface, usually at the crowning condition. The canonical orders all use variations of a 45° geometry, and this is generally a good place to start. But shallower and steeper facial angles are common. For example, for a cornice on a building in especially sunny or rainy locales, where enhanced protection for windows below is desirable, a shallower facial angle might be warranted. Conversely, for interior wall treatment, where the effect is to be less monumental and more restrained, a steeper facial angle might be desirable.

MOLDINGS AS ARCHETYPES

When we learn the elements of classical architecture, we are often taught to understand them as components that are precisely defined by rigorous specifications and precise proportions. But to be truly creative in the use of the classical language, we should feel free to vary from the canon when appropriate. Indeed, the work of master architects, from antiquity to the present day, shows us that almost no finished work is exactly like one of the canonical standards (**Figure 5**). Nor should we want them to be.

Moldings, like all of the elements of classical architecture, are best thought of as archetypes. An archetype is an original, idealized model, from which all things of the same type are considered representations, based on shared characteristics. A good example can be drawn from taxonomy. Dogs share a common list of characteristics—a similar body plan, with four legs, an elongated torso, head at one end, tail at the other, similar skeletal structure, etc. Yet we see a wide array of different breeds, from Chihuahuas to Great Danes. But they are all derivative of the archetypal model; they are all “dogs.”

The same is true with the elements of classical architecture, and more specifically, with the classical moldings. Although we learn the moldings by learning a series of archetypal shapes, in the field those shapes are manifested in a nearly endless variety of possibilities. Curvature can be circular, elliptical or compound. Moldings can be understated or oversized. They can be smooth and plain, or they can be exuberantly embellished. They can be used in different combinations to achieve varying effects.

In the natural world, form blossoms from a few basic biological types into the vast complexity we see around us. In a similar way, the moldings spring from their simple geometric archetypes to become the building blocks of a complex and marvelously nuanced language of classical architecture.



FIGURE 5

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2133 3 7/8" x 3/4"
Colonial era moulding piece with a floral design and vertical bead and barrel pattern.



2195 2 3/4" x 2 3/16"
Colonial era moulding with palmette pattern appropriate for use as a chair rail or a casing moulding.



2139 3 3/16" x 2 15/16"
Colonial era crown moulding with an acanthus leaf pattern and rope detail.



2160 2 15/16" x 7/8"
Casing moulding with a rope detail and triple bead and barrel pattern with simple plain faced and milled details.



2148 3 1/2" x 15/16"
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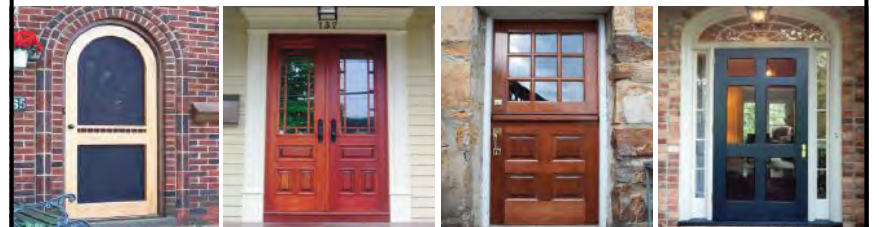


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Cast in Stone

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Cast stone, the legendary look-alike for natural cut stone, has never been surpassed for simulating shaped masonry building elements and landscape features of all kinds. “In one form or another, cast stone has been around for hundreds of years,” explains David West, president of Haddonstone USA in Pueblo, Colorado, “but typically the material is granular limestone, 1 millimeter to 2 millimeter in size, white Portland cement, and silica sand. Small amounts of water are added so that you get a mix about the consistency of beach sand when you make a sand castle.” At Haddonstone, the mix is hand-compacted into a mold during the day, left in the mold overnight, then demolded before proceeding to a curing process. “Curing uses a fine vapor mist that encourages the hardening of the cement, giving it a conventional, seven-day strength overnight.”

When so combined, the ingredients adopt the appearance of natural limestone, with a surface texture very similar to quarried stone, yet advantages in time and efficiency. “If somebody is tooling a quarried stone, and they need 50 pieces, they’ve got to cut, sculpt, or carve, them out individually,” says West. “Whereas if we were to produce one mold, we can cast 50 pieces in a significantly shorter space of time; it’s more cost-effective.”

Depending upon the type of limestone used, cast stone can range in color from gray to a beige hue, but products can also be custom-colored by adding dyes to the mix. “This comes into play a lot in renovation and restoration projects, certainly in churches, for instance,” says West, “because color-matching would be able to achieve new units comparable to existing materials on the site.” First, the contractor would send the manufacturer an actual sample piece of the existing stone. “Next, we would make up five or six small mixes, adding various degrees of dye to each mix in order to obtain a suitable color match. We’d keep a record of the recipe, and the amount of dye that’s in each particular mix. Then we’d send our five or six mixes back out to the site for the contractor or architect to choose which looks best.”

Haddonstone photos



LEFT This neo-classical residence incorporates a portico, stonework pediment, and garden ornaments by Haddonstone.

ABOVE Courtyard Creations constructed this unique home in Pueblo, Colorado, featuring architectural stonework and landscape elements by Haddonstone.

West's company typically relies on two types of molds. "One type is timber (wood) that we use with more simplistic profiles such as plinth courses, pier caps, and so on that have a lot of relatively flat surfaces. The other type is a rubber-and-fiberglass shell mold, which we employ to achieve a high level of detail." The rubber is the actual mold, and flexible enough that it can be pulled away from the detail without breaking any of it off.

Cast stone has long been the actual source of "turned" elements such as balustrades and columns, but it also appears in the ornamental trimwork like belt courses, spandrels, and bandings that accent brick or stone construction in traditional architecture. "We do numerous types of windows and door surrounds," says West, "everything from residential projects, which may be relatively simple, 4-inch by 4-inch sections around the window, to larger sections, such as 10-inch by 10-inch for bigger buildings." He says if the exterior is masonry, such as brick or stone, typically these are solid sections, "but we also have

thin-wall material, about 1-inch to 1½-inch thick, that can be screwed to a wood-frame structure, and works for retrofits as well as new construction." They have everything for entranceways too—ashlar blocks, quoins, arches—for commercial structures to religious buildings.

Says West, "In our process, any sort of crisp edges or details—for instance, the chamfers on quoins—are built into the mold, so basically, the surface texture remains completely uniform." Cutting cast stone can reveal a varied appearance as well as leave saw marks. "You can certainly cut cast stone. For instance, when you install a plinth course, we would probably supply units in nominal lengths of 36-inches or so and then contractors would cut those lengths to suit on site. But what they're cutting is the end section, just the joints, so it is not visible on the surface."

For cornices, West says there are two or three ways to approach an installation. "You could have a solid unit with a cornice that would need to be mechanically fixed back to the structure." Typically that would be



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The image shows a multi-level garden or terrace. In the foreground, a curved stone balustrade with decorative balusters is prominent. Below it, a staircase with a metal railing and wooden handrails leads down. In the background, another level of the garden is visible, featuring more stone balustrades and lush greenery with various flowers. The overall scene is bright and sunny, with a focus on the architectural details of the stone work.

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ABOVE Haddonstone has a dedicated team in Colorado who strive to create the finest stonework. Each design is hand crafted by the in-house technical team, steel fabricators, and stone casters.

RIGHT The skilled team at Haddonstone manufacture architectural stonework in three high specification materials to cater for renovation, retro-fit, or new build properties.



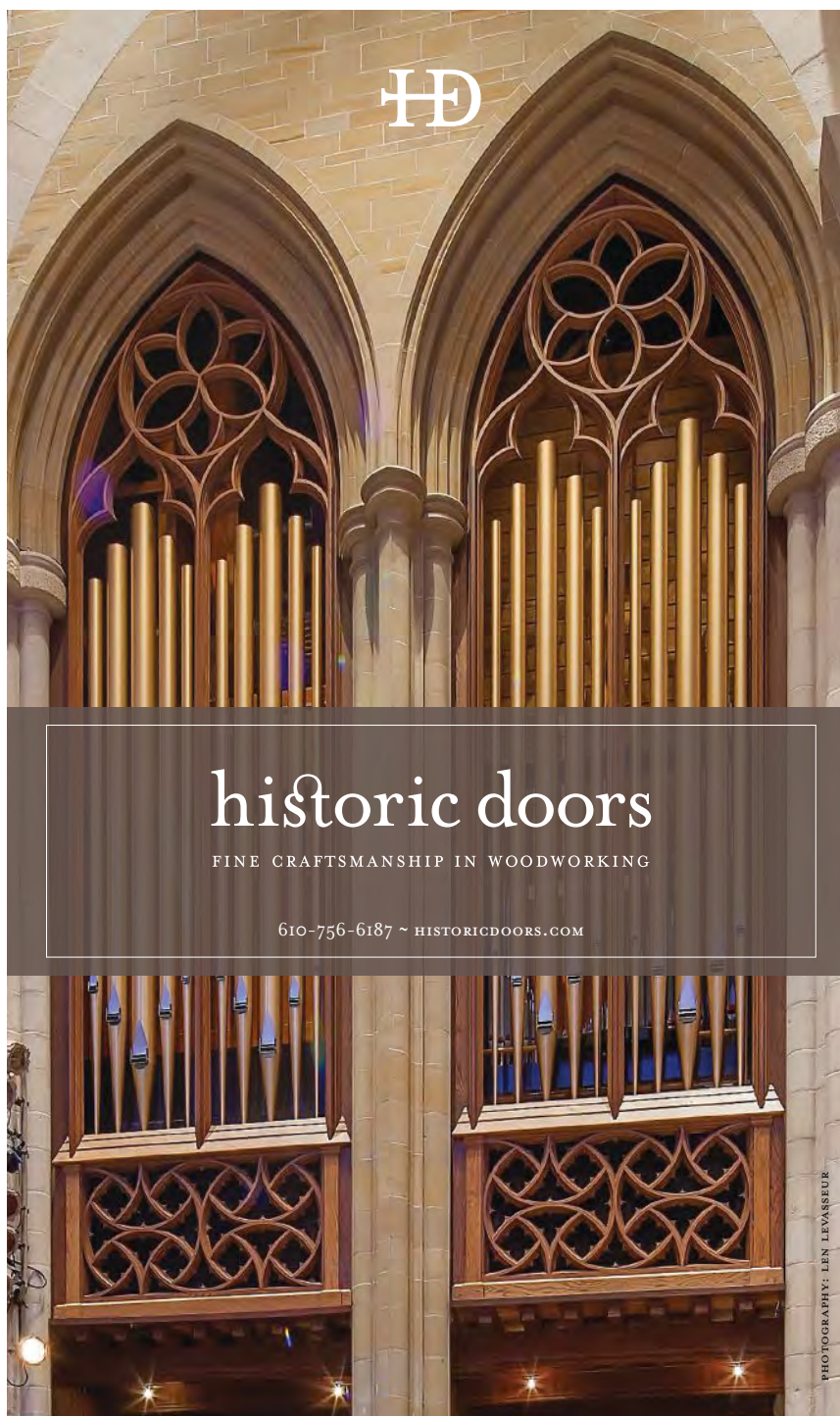
dictated by whether it's a masonry façade or another type of construction. A second option is to have the cornice unit L-shaped. "If it has to span a particular opening size, the cast reinforced concrete poured behind the material would provide that structural base. Effectively it becomes sort of a decorative cornice." Alternatively, there are thin-wall versions available from his company that can be screwed to the façade or retrofitted.

Any discussion of religious buildings and cast stone inevitably touches on traceries, the curvilinear openwork of Gothic windows. "Historically they were carved out of stone, but it's certainly something that can be done with the nature of cast stone." In fact, the manufacture of cast stone tracery windows was a lively industry around 1900. As West describes, the general process relies on a second type of mix. "The semi-dry mix, explained earlier, is really more for ornamental and self-supporting structures. A second type goes into the realms of a

wet-mix or a wet-pour mix that enables you to lay reinforcement in the molds while the mix is poured over." Typically though this reinforced cast stone is only self-supporting for the span of the window itself—not supporting any structure above. "The beauty of a tracery is where a rubber and fiberglass mold comes into play in order to be able to create the complex curves."

Adds West, "We've got our standard range of products, obviously, but we do everything to facilitate custom projects." First they take an architect's design and then produce shop drawings for approval. "After that we would make models, if required, and all the molds in-house. We have everything here, under one roof."

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



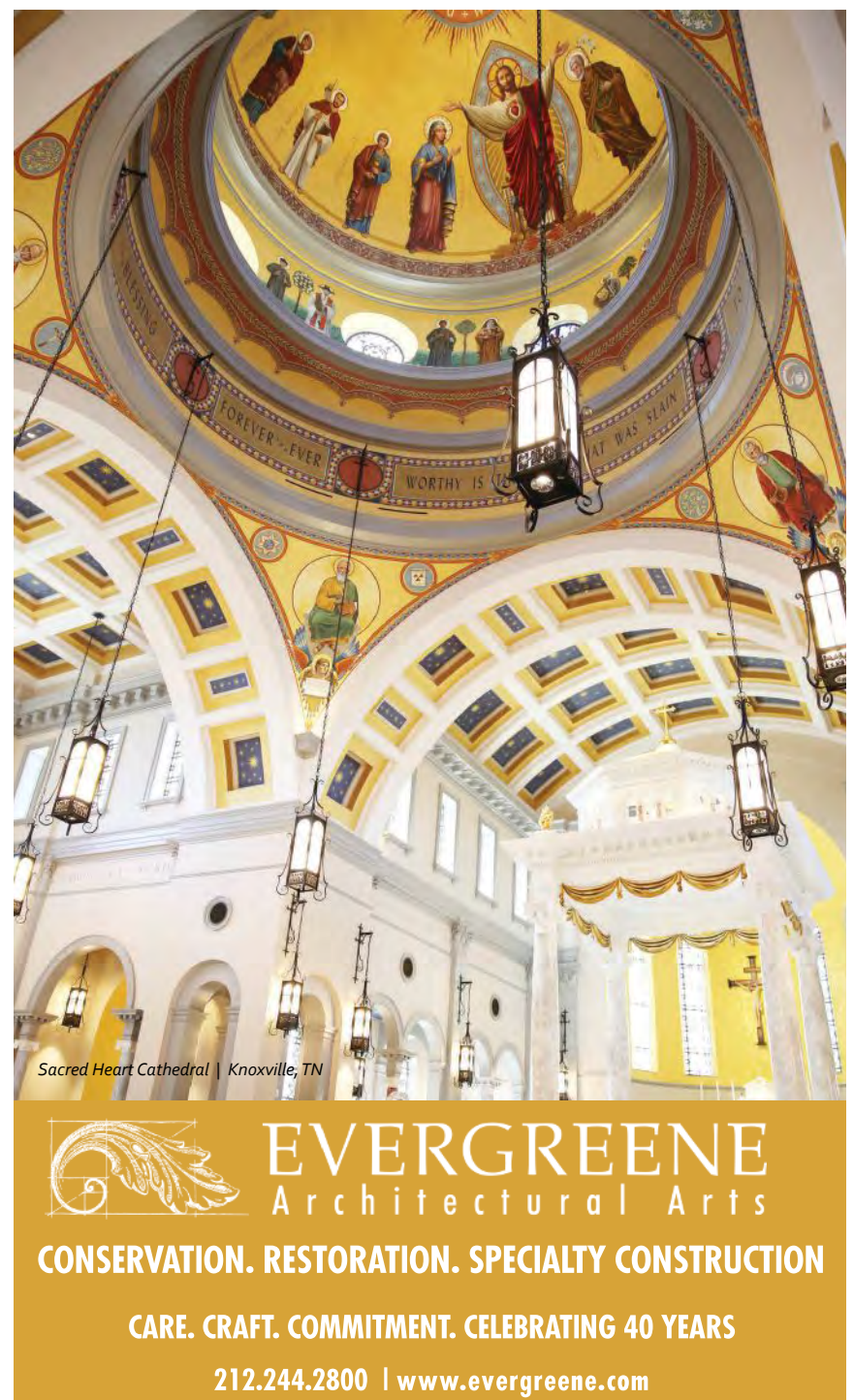
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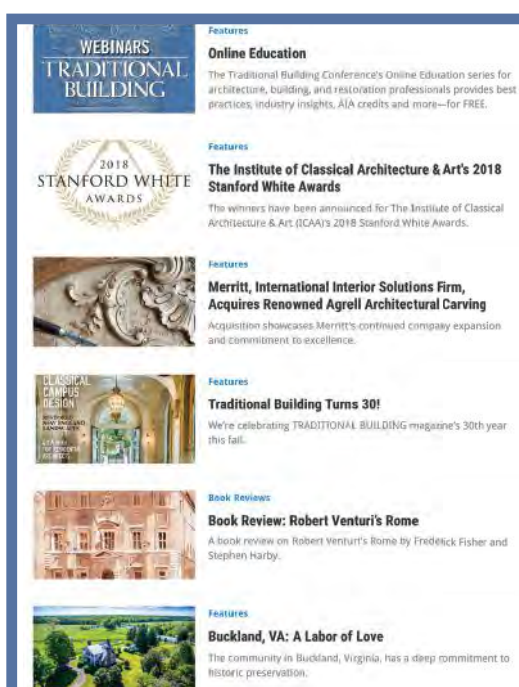
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Massing the Assembly

Holy Name of Jesus Cathedral by O'Brien & Keane is a prominent example of traditional Catholic church architecture.

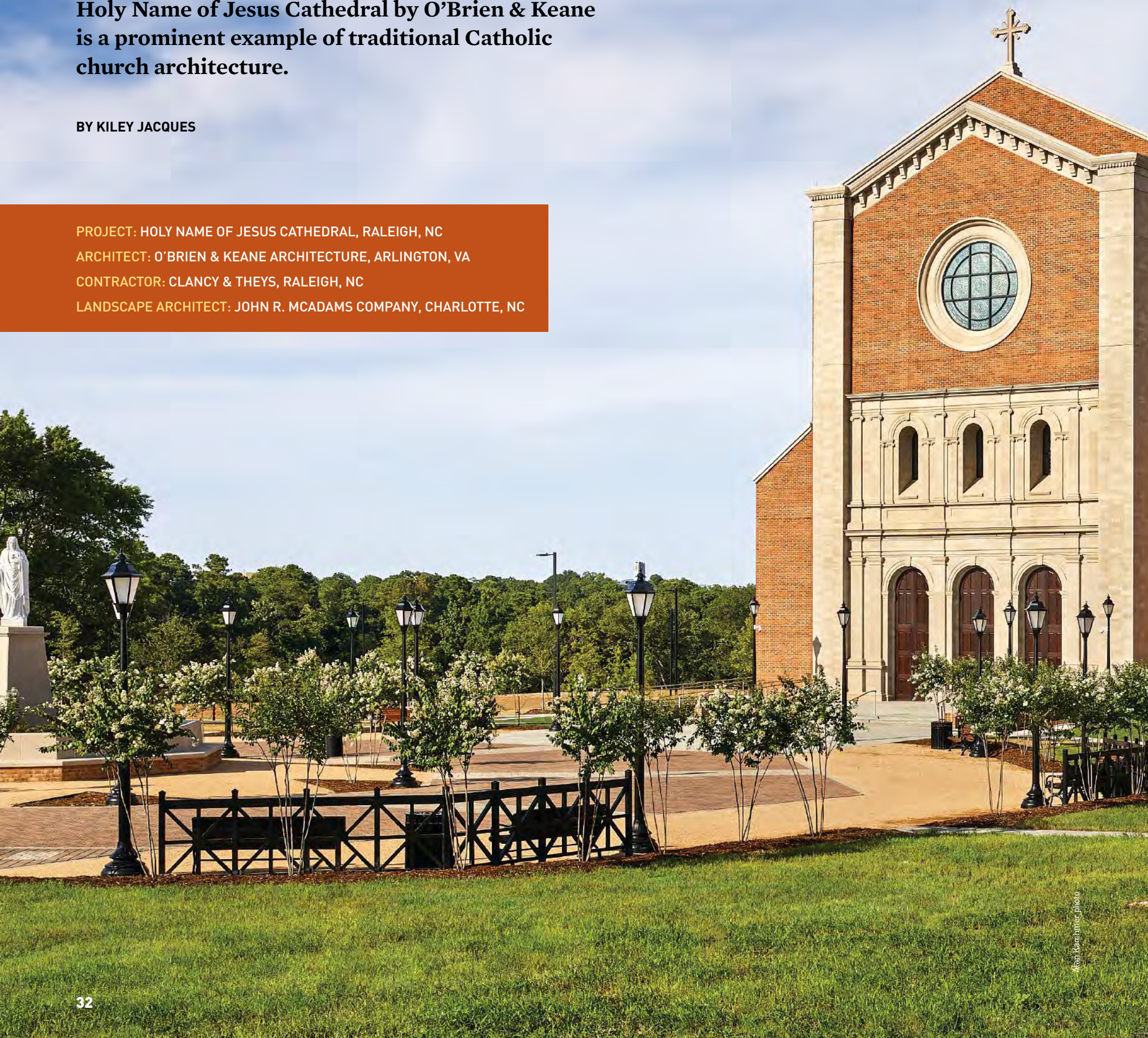
BY KILEY JACQUES

PROJECT: HOLY NAME OF JESUS CATHEDRAL, RALEIGH, NC

ARCHITECT: O'BRIEN & KEANE ARCHITECTURE, ARLINGTON, VA

CONTRACTOR: CLANCY & THEYS, RALEIGH, NC

LANDSCAPE ARCHITECT: JOHN R. MCADAMS COMPANY, CHARLOTTE, NC





The design is similar to other cathedrals in that it was built on a 2,000-year-old heritage of sacred architecture. At the same time, it is intended to be a reflection of the values of the faith community, so it is bound to be unique.



LEFT: Alan Karchmer photo; OPPOSITE: Chris Sheridan photo

“Church buildings must, above all things, act in service to the sacred rites with architecture that moves the soul to prayer . . .” — JAMES O’BRIEN

ABOVE Along with the majority of liturgical furnishings, the baptismal font—located at the western end of the nave, on the axis of symmetry—was designed and fabricated by the architect. The basin measures six feet in diameter.

OPPOSITE Cast stone, specified in a range of colors, is incorporated into the most prominent parts of the building, such as the west-entry façade and the exterior of the chapel. The roof surfaces are clad in copper.



When O'Brien & Keane Architecture of Arlington, Virginia, were called upon to design and build a church for the Diocese of Raleigh, North Carolina, they were also being charged with addressing the needs of the area's growing Catholic community. Conceptualized in the fall of 2013 and dedicated in July 2017, the 43,000-square-foot Holy Name of Jesus Cathedral replaces the more diminutive Sacred Heart Cathedral to accommodate seating for 2,000 parishioners. The new building is a study in classical sacred architecture, with its emphasis on the cru-

ciform structure and prominent dome, the latter of which serves to visually tie the church to downtown Raleigh. It is anticipated the church will host major liturgical celebrations, pilgrimages, and events for generations to come.

SACRED DESIGN

"Through our firm's experience in church design, says principal architect James O'Brien, "I've learned about some key [components] that combine to create sacred architecture. They include verticality, transcendence, focus, and hierarchy, to name a few. The cathedral presented an opportunity to put all of these [elements] to work."

Following the cruciform plan, the main axis of the building has an east-west orientation, with the entrance to the west, as is traditional and indicative of Catholicism in sacred scripture. O'Brien explains: "The cruciform shape is very important. Beyond being the basic symbol of the church, the cross orders the placement of the parts. The faithful are gathered in the nave (legs) and transepts (arms), doing the work of the church, while the crossing (heart) and apse (head) are the place of Christ, found in the sacraments."

The entry introduces the classical orders—the Doric being expressed in the first tier of the façade, the Ionic in

the second tier. The drum of the 162-ton copper-clad ribbed dome is denoted with paired Corinthian columns, an entablature, and 16 arched windows. And the sanctuary is located at the crossing under the dome, while the tabernacle is found in the eastern apse. Congregations sit in the nave and transepts enjoying light from clerestory windows, and an arcade separates the aisles.

"We took care to maintain vertical proportions throughout the nave and transepts," notes O'Brien, pointing out the arches, vaults, and the dome as some of the architectural features that accentuate verticality. "The motivation for transcendence is found in our desire



to build a place that is close to God,” he adds, noting that some of the spaces in the cathedral are carefully shielded from the surrounding environment, with thick walls that block outside noise to create a serene setting conducive to prayer.

A public plaza accommodates vehicular and pedestrian circulation, and functions as a social gathering place. To transition from the grounds to the interior spaces, visitors make use of a tall and spacious narthex—much like an open atrium—which also links to the Chapel of All Saints. O’Brien describes the movement from outside to in: “We provided a progression through spaces of increasing differentiation and solemnity—from our ordinary, worldly environment, beginning with the octagonal entry plaza, and continuing in procession to the holy altar.” The narthex was modeled on the courtyards of antiquity

and features the classical orders of Doric and Ionic, as well as a barrel vault.

EXTERIOR DETAILS

Wood-mold brick with grapevine mortar joints were used for the majority of the façade, while multihued cast stone is seen on the structure’s most prominent elements, such as the west entry façade and the chapel’s exterior. For texture and visual interest, the masonry includes corbelling (minor projections in the brickwork), and copper roofs tie the assembly together.

While the main entry is marked by Doric and Ionic features in its brickwork, cast stone piers, parapet, and window surrounds, those of the transept ends are simplified, though designed to visually relate. Notable above the cast stone entry is a round, 12-foot-in-diameter window set into a field of brick, which itself is framed in cast stone

piers and an entablature reminiscent of Romanesque design.

Ground-floor paired arched windows are arranged in 22 bays to punctuate the exterior walls of the nave and transepts. The composition tapers upward with single arched windows centered above the pairs in the clerestory of each bay. To distinguish the chapel as a special entity its exterior is straight cast stone, and for the joints to be parallel, the voussoirs were custom made to form the arches.

Topping the 173-foot dome is a decorative finial and a cross. Other embellishments include a balustrade, engaged Corinthian columns and moldings, rusticated brickwork, and quoins. An exceptionally special detail is the Santafiora cornerstone, which was blessed by Pope Francis and is inscribed with a gold-rendered image of a Christogram. Also impressive is the 154-foot

bell tower housing 50 bells of widely varying weights, one of which was salvaged from the original Sacred Heart Cathedral.

INTERIORS FOR THE AGES

Seating for the congregation is illuminated by clerestory windows and is located within the nave and transepts. Each transept seats 500 people and the nave holds 1,000. The design intent was for the pews to be close to the altar in order to enhance the connection between assembly and sanctuary. A 3,500-sq.ft. mezzanine, located above and to the west of the nave, accommodates a choir, 30 musicians, and a pipe organ with 61 stops.

“The dome reaches upward above the assembly, and through it sunlight illuminates the sanctuary directly below, serving as an architectural expression of the union of Heaven and Earth that

LEFT The tabernacle stands on an elevated platform within the eastern apse and was conceived as a miniature cathedral. Incorporating the Corinthian order was intended to denote its sanctity.

RIGHT Below the dome, the sanctuary platform houses the vital liturgical furnishings, with the altar of sacrifice as the focal element.

BELOW Inspiration for the design of the apse came from a scripture passage that includes a description of Heaven as a lamb joined by four creatures, 24 elders, and seven lamps.





takes place within our worship and prayer,” says O’Brien. Below the dome, the sanctuary—including the altar of sacrifice, ambo, and cathedra—contains liturgical furnishings, and features the altar as the focal point. The flooring is made of Bardiglio Nuvolato marble slabs with diamond accents of Bianco Carrara C, and a border of Bianco Carrara C marble with Giallo Siena diamond accents. “The most sacred and important feature of the cathedral is the altar, which we placed to make unmistakably prominent and powerful,” notes O’Brien.

Ten large stained-glass windows are each flanked by two smaller windows. Additional windows are placed in an alternating pattern with the salvaged stained-glass windows found in the nave and transepts. The borders of the newly fabricated windows mimic those of the originals but have translucent glass rather than biblical scenes. Back to the idea of verticality, O’Brien says: “We placed windows high in the walls so that daylight enters the space from above.”

The tabernacle stands on an elevated platform within the eastern apse and

was conceived as a miniature cathedral. Inspiration for the design of the apse came from a scripture passage that includes a description of Heaven as a lamb joined by four creatures, 24 elders, and seven lamps.

Incorporating the Corinthian order in the chapel, which is embedded in the main cathedral building, was intended to denote its sanctity. The chapel seats 40 congregants and features marble liturgical furnishings and seven windows—four depicting the Evangelists, two decorative windows, and one round

window featuring an angel.

All of the liturgical furnishings—designed by O’Brien & Keane—are rendered in Bianco Carrara C marble with Giallo Siena marble accents on the pilasters and panels. Of the altar, ambo, cathedra, tabernacle, and font, as well as the altar and tabernacle in the chapel O’Brien says: “They were composed as an ensemble of related pieces that together, I hope, begin to form a unified design expression. These elements are intended to showcase the beauty of Creation and through it, the majesty



of the Creator.” Liturgical artwork is found along the interior perimeter and includes: shrines to Our Lady of the Immaculate Conception and St. Joseph the Worker, 24 statues of selected saints, and 14 Stations of the Cross, among others.

GREEN ELEMENTS

The Diocese has repurposed this land multiple times. For this incarnation, it was important not to disturb the area’s natural habitats—a demonstration of the church’s “commitment to and leadership of the stewardship of our natural resources.”

Therefore, the building and grounds were sited on a previously developed portion of the land. The cultivated landscape includes a tree preservation area, buffer yards, a wetland preservation, gardens, and sports fields. Plantings feature native and drought-tolerant species to minimize irrigation needs.

Other green strategies include a tighter than average building envelope, energy-efficient components including the primary HVAC systems, and salvaged materials in the form of stained-glass windows from the Church of the

Ascension, which are now found in the nave, transepts, and chapel.

All told, the Holy Name of Jesus Cathedral stands in homage to the Catholic Church’s respect for classical form and sacred function. It is set to perform with grace well into the future—its past in full view. As O’Brien concludes: “We were asked to design a ‘timeless and traditional’ building. I hope the cathedral is seen in that way—as something built on centuries-old heritage of Catholic architecture, even though it is a thoroughly modern, high-performance building.”

LEFT The cathedral was designed using the “key ingredients” of sacred architecture: verticality, transcendence, focus, and hierarchy. The building was intended to stand as a witness to the community’s faith. For that reason, the silhouettes of the dome and tower punctuating the skyline are vital. From within the tower, the bells embody the “voice” of the cathedral, calling out and welcoming the people.

KEY SUPPLIERS

ARCHITECT

O’Brien & Keane

STRUCTURAL ENGINEER

Morrison Engineers

MEP ENGINEER

Brummett Engineering

CIVIL ENGINEER

John R. McAdams Company

GENERAL CONTRACTOR

Clancy & Theys Construction, Inc.

STRUCTURAL STEEL CONSTRUCTION

Steelfab, Inc.

WALL CONSTRUCTION

Sears Contract, Inc.

ROOFING CONSTRUCTION

Baker Roofing Company

MASONRY AND CAST STONE CONSTRUCTION

Brodie Contractors, Inc.

MECHANICAL CONSTRUCTION

Newcomb & Company

ELECTRICAL CONSTRUCTION

Code Electric

MARBLE FLOORING AND FURNISHINGS FABRICATION

Roberto Pagliari Stone Consulting, SAS

MARBLE INSTALLATION:

Booms Stone Company

PORCELAIN TILE CONSTRUCTION

David Allen Co.

ORGAN DESIGN AND FABRICATION

CB Fisk, Inc.

STATUES

Ferdinand Stuflesser 1875

STAINED GLASS WINDOWS

Beyer Studios

CUSTOM LIGHTING FIXTURES

Rambusch Lighting



THE PRESERVATION OF CHRIST CHURCH LUTHERAN

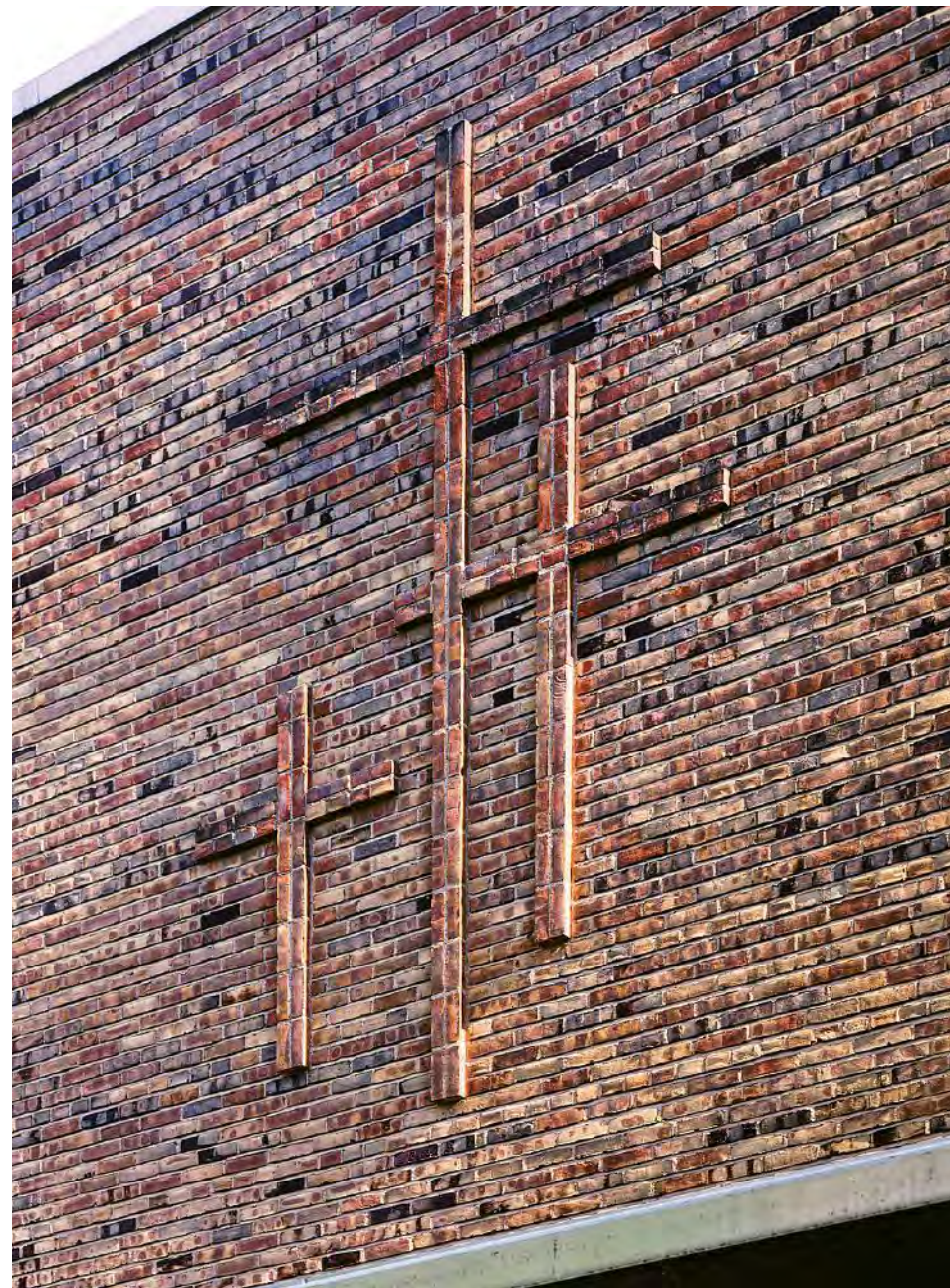
MacDonald & Mack Architects preserves Christ Church Lutheran, a National Historic Landmark and modernist icon designed by Eliel and Eero Saarinen.

BY ERICA HOLTHAUSEN | PETER J. SIEGER ARCHITECTURAL PHOTOGRAPHY

PROJECT Christ Church Lutheran, Minneapolis, MN

ARCHITECT MacDonald & Mack Architects, Minneapolis, MN
Robert Mack, FAIA, FAPT, Partner in Charge
Angela Wolf Scott, AIA, LEED AP, Project Architect





Hidden away in a Minneapolis residential neighborhood, Christ Church Lutheran is one of the nation's first modernist churches and an extraordinary example of twentieth-century ecclesiastical architecture. Designed by Eliel Saarinen, the chapel is adjacent to a later addition designed by his son, Eero Saarinen.

The chapel was completed in 1949, and is considered by many to be Saarinen's masterwork. From the outside, it is unassuming, a steel frame clad with bricks of varying colors and an eighty-eight-foot tall bell tower crowned by an aluminum cross. A glass-enclosed partition connects the tower to the nave.

The interior of the chapel is finished with rose-colored Chicago common brick. To enhance the acoustics of the sanctuary, the brick walls undulate gently, reducing echoes while amplifying the sounds of the congregation. The wall at the front of the sanctuary is curved and washed lightly with white paint. It is adorned with a simple aluminum cross.

Natural light streams through a hidden glass partition, illuminating the chancel.

"Saarinen knew exactly what he was doing with the composition, form, and materials," says Angela Wolf Scott, AIA, of MacDonald & Mack Architects. "He knew how all of that fit together to meet the needs of the congregation. It is a space designed for humans—simple, quiet, and lovely."

A single-story hallway connects the sanctuary to the 1962 addition, an education wing designed by Eero Saarinen that sits on the other side of a landscaped courtyard. Known for his bold futuristic designs, including the St. Louis Gateway Arch, Eero chose to pay homage to his father's work. The single-story building is constructed of brick, identical to that used on the church. Floor-to-ceiling windows mimic the design of the nave and provide a view across the courtyard to the chapel. Designated a National Historic Landmark in 2009, Christ Church Lutheran is the only building where the work of father and son can be seen side-by-side.

A DETERIORATING BELL TOWER LAUNCHES A SIGNIFICANT PRESERVATION EFFORT

In 2007, the church became concerned about the deterioration of the bell tower. Corroded metal, eroded mortar joints, and spalled brick was visible on all four sides. MacDonald & Mack Architects was hired to examine the building, assess the masonry and windows, and mitigate damage caused by water filtration and underlying structural issues.

Will Stark, a preservation planner and member of the congregation, recognized the danger posed by the deteriorating bell tower. In 2008, he was one of the founders of the Friends of Christ Church Lutheran, an independent nonprofit organization dedicated to preserving the church and sharing its history.

Stark died from pancreatic cancer last summer, leaving behind an extraordinary legacy. "Will was the glue that held so much of the recent preservation work together," says Wolf Scott. "He organized and spearheaded projects, gained consensus for approach and work, managed the big

The exterior of the chapel is simple, with little in the way of decoration. Three brick crosses serve as relief elements on the wall adjoining the bell tower.



ABOVE The white-washed wall at the front of the sanctuary is adorned with a simple aluminum cross. Natural light streams in from a hidden glass partition, illuminating the chancel.

OPPOSITE The brick walls of the nave undulate gently, reducing echoes while amplifying the sounds of the congregation.



picture, wrote and tracked grants, and led the fundraising efforts.

Under Stark's leadership, the Friends received funding from the National Park Service's Save America's Treasures initiative. As a stipulation of the grant, construction documents were reviewed and approved by the State Historic Preservation Office and the National Park Service. It also requires future work to be reviewed and approved by the Minnesota State Historic Preservation Office.

The deterioration of the bell tower was caused largely by its structural reinforcements, which were integrated into the masonry joints every three courses. As the mortar aged and cracked, water seeped through and started to rust the metal reinforcing. The expansive force of rusting, referred to as oxide jacking or rust burst, broke the surrounding mortar and brick.

"There was no good way of dealing with it," says Wolf Scott. "We couldn't leave the structural reinforcements in place, so we put together a treatment philosophy that called for us to do as little as possible while mitigating those things that would cause ongoing

damage to the tower. We specified that the masonry contractor repoint the entire tower, removing the mortar to a depth of two inches or until they found the reinforcing in every third course."

The masonry contractor removed most of the metal reinforcing and replaced every single spalled brick. "If we left bricks without their faces on the tower, water could get into the reinforcing," says Wolf Scott. "We needed to make the tower as water resistant as possible."

The restoration of the tower was completed in 2011. Wolf Scott then developed a Historic Structure Report that documents the building's history and current condition and outlines treatment recommendations.

DEFINING A PRESERVATION PHILOSOPHY FOR CHRIST CHURCH LUTHERAN

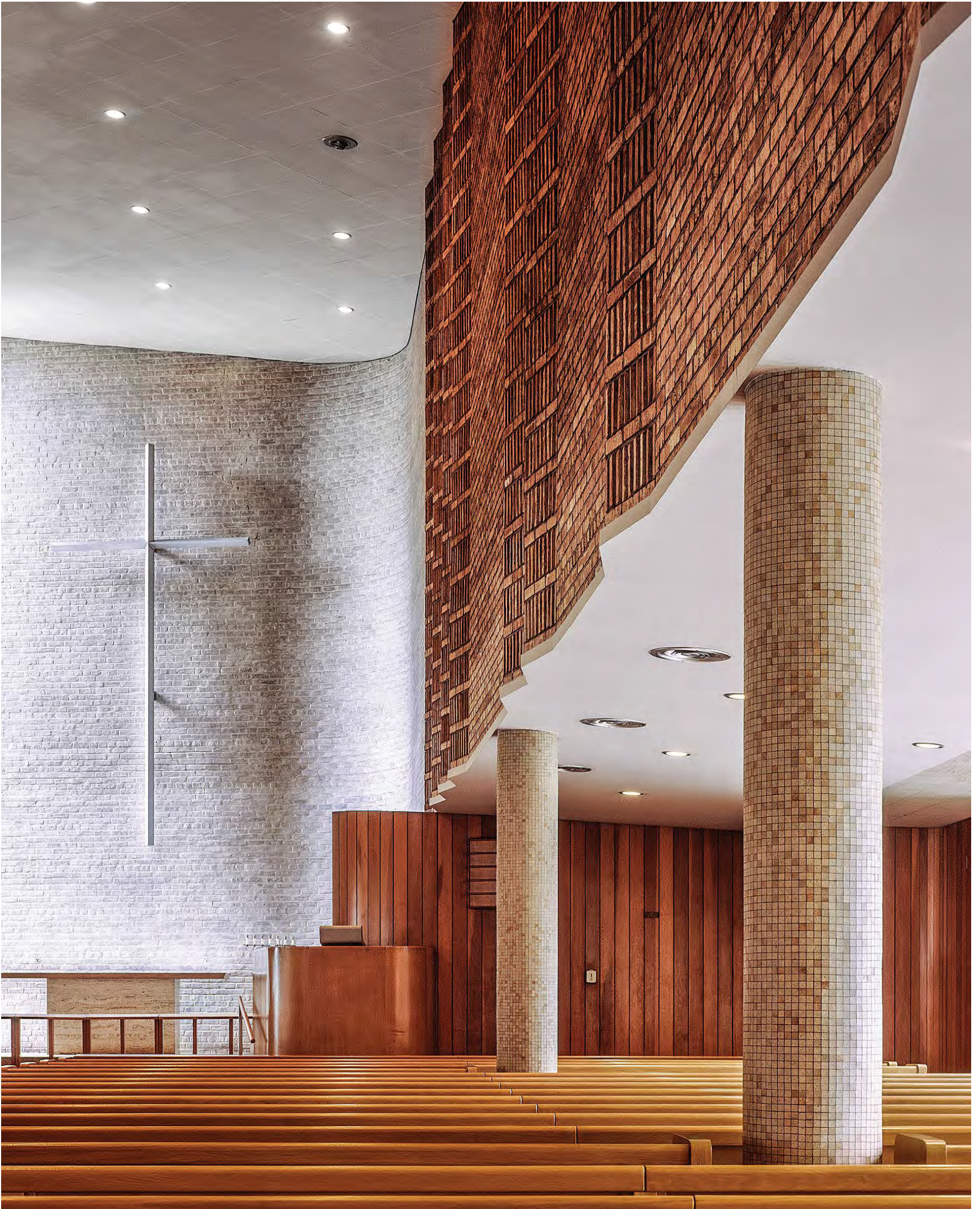
Since the restoration of the tower, the church has completed several major projects, including accessibility upgrades, structural repairs, courtyard and landscape restoration, roof repairs, masonry and hardware restoration,

and extensive stormwater management and waterproofing. Modifications to the organ room and restoration of the organ screen were completed, and a new organ, designed and built by Dobson Pipe Organ Builders, was recently installed. A landscape master plan and design for a new columbarium are currently underway. But it was the recently completed restoration of the baptismal font that defined the preservation philosophy for Christ Church Lutheran.

"The baptismal font is the entire building in one little piece," says Wolf Scott. "It is every struggle, every philosophical question, every material question—everything embodied in one object."

Designed by Eliel Saarinen, the gently-curving, mirror-finished baptismal font plays with light that reflects off the sides of the vessel and dances with the water. But the mirror finish was pocked and deteriorating, and the plating substrate was corroded.

"The question that kept coming up is when there's a conflict between keeping the integrity of the fabric and keeping the integrity of the design—when the design





ABOVE The nave provides seating for 600 parishioners. The high clere-story walls of the nave give way to single-story wings that create a more intimate space.

RIGHT & CENTER An outdoor arcade and single-story hallway connect the chapel to the education wing, and creates a small landscaped courtyard with raised planters and a central fountain.

FAR RIGHT A Mankato limestone wall on the east façade of the chapel serves as a backdrop for a series of four sculptures—faith, hope, love, and education—by William M. McVey.





is the thing that is significant—how do you resolve it?” says Wolf Scott.

The Minnesota State Preservation Office felt that the baptismal font needed to be repaired. Midwest Art Conservation Center experimented with different techniques, but these efforts sacrificed Saarinen’s original design.

“The baptismal is just lovely and it’s the heart of the church,” says Wolf Scott. “There are so few instances where modern religious architecture has a chance to shine and show iconography, and this basin nailed it! But if we lose that mirrored finish, and you’ve got all these pockmarks, and it’s still deteriorating, then what are we doing this for?”

Today, the repaired basin is housed in the church’s archives. “We got consensus that we are not conserving the fabricator’s work,” says Wolf Scott, “we are conserving Saarinen’s work.”

Replacing the basin was more challenging than anticipated. Modern processes used to create a mirrored finish didn’t have the same effect as the original, and there were several barriers with substrate materials. After experimenting with base metals, finish metals, and finishes, the baptismal font was reinstalled in October 2018.

“It takes a village to do work like we’ve done here,” says Wolf Scott. “There’s an incredible village at Christ Church Lutheran.”

KEY SUPPLIERS

STRUCTURAL ENGINEER Mattson Macdonald Young Engineers

MEP ENGINEER Dunham Engineers (Historic Structures Report)
Nelson Rudie and Associates (Construction Projects)

LANDSCAPE ARCHITECT Nathan Anderson

CIVIL ENGINEER Anderson Engineering

CONTRACTORS Macpherson Towne Co.; Watson Forsberg Co.;
Jackson and Associates

OBJECTS CONSERVATOR Midwest Art Conservation Center

AWARDS + DESIGNATIONS

American Institute of Architect’s 25-Year Award (1977)

U.S. National Register of Historic Places (2001)

U.S. National Historic Landmark (2009)

Minnesota Preservation Honor Award (2012)

SIGNIFICANT GRANTS

Save America’s Treasures

Minnesota Historical and Cultural Heritage Legacy Grant



Divine Dome

Rambusch Decorating Co., creates the Trinity Dome mosaic at the Basilica of the National Shrine of the Immaculate Conception.

BY NANCY A. RUHLING

KEY SUPPLIERS

**MOSAIC DESIGNER/
ARTISTIC OVERSEER**
Rambusch Decorating Co.,
Jersey City, NJ

MOSAIC FABRICATOR
Travisanutto, Spilimbergo,
Italy

**DESIGN FOR DOME RING
TEXT AND PENDENTIVES**
St. Jude Liturgical Arts
Studio, Havertown, PA

GENERAL CONTRACTOR
Rugo Stone, Lorton, VA

Photos by Rambusch Decorating Co.

For nearly a century, the Basilica of the National Shrine of the Immaculate Conception, which believers affectionately refer to as America's Catholic Church, has been a divine design work in progress.

The cornerstone of the largest Roman Catholic Church in North America, which is in Washington, D.C., was laid in 1920, and its crowning jewel, the mammoth mosaic that adorns the heavenly Trinity Dome, was completed in 2017.

During the intervening decades, construction stopped and started as finances ebbed and flowed. The long-term project brought about the artistic collaboration between the basilica, the nation's preeminent Marian shrine, and Rambusch Decorating Co., a fourth-generation family firm, run by twins Edwin and Martin, that specializes in lighting, glasswork and furnishings and that also is well versed in liturgical design.

Rambusch, which won the commission for the Trinity Dome, did its first work for the basilica way back in 1931, the year the crypt church was completed. That project was Our Lady of Lourdes chapel, the first one outside the crypt.

Then it worked as the designer and artistic overseer on several other projects, including the Italian chapel, the Redemption Dome, the Incarnation Dome, and the gallery vault. For those latter projects, it worked with its own trinity team with general contractor Rugo Stone and mosaic maker Trivisanutto.

"We feel the building is our ongoing client," says Martin Rambusch, who is in charge of crafts and chairman of the board of the Jersey City, New Jersey, company that was founded in 1898. "The Trinity Dome is a pinnacle project for us and for the building. My brother, Edwin, has noted how rewarding it is to see the three mosaic domes, which our father, Viggo and Edwin, president of the firm, started in 2006, brought to such a glorious conclusion less than 12 years later."

Even by the basilica's iconic standards, it was a monumental project: Painted a basic off-white before the installation of the mosaic, the dome, which is 88.5 feet wide and 44.25 feet tall, covers over 18,000 square feet. The resulting mosaic holds the title of the largest completed in a dome in North America.

"There's a succession of domes in the shrine, and our charge was to create a mosaic in the Trinity Dome that would relate to those in all the other domes so that it would look like it had been in the basilica forever," he says.

As the project evolved, the design

team worked with the church's iconography committee.

"The original committee, which was formed in the mid-1950s, only had left a verbal definition of what the design was to be," Rambusch says. "All we knew was that there was to be a depiction of the Blessed Virgin Mary and The Most Holy Trinity."

Rambusch and the basilica committee fleshed out the design, which ultimately drew in a procession of saints associated with the Americas and the shrine as well as angels.

Thus, the dome is populated by a coterie that includes St. John Paul II, the first pope to visit the National Shrine; the Archangel Michael; St. Juan Diego of Mexico, the first canonized Native American man; the Archangel Gabriel; St. Rose of Lima, the first canonized saint of the New World who is also depicted in the shrine's Guadalupe Chapel; and St. Teresa of Calcutta, who was an honorary U.S. citizen.

The basilica's founder, Bishop Thomas J. Shahan, had a grand vision for the project. He considered the Trinity Dome "the crowning jewel" for the shrine, which he christened a "hymn in stone."

"We kept refining the mosaic design down to the wire," Rambusch says, calling the last-minute decisions a "hair-graying and hair-losing" challenge. "Some of the saints and figures were not depicted anywhere else because they are saints of today, so we had to decide how to do that. We used reference materials to create true and modern renditions."

Because the basilica wanted Masses, which began on Easter Sunday in 1924, to continue during the installation, Rugo Stone built a scaffold that Rambusch likens to a "building within a building at the top of the church."

He added that during the course of the work, which was financed in large part by a fund-raiser on Mother's Day in 2017 with a special collection in parishes across the country, only one Mass had to be canceled.

The 14 million pieces of Venetian glass in more than 1,000 color variations were handmade in Venice and Murano and fabricated in Spilimbergo, Italy, by Trivisanutto. Weighing 24 tons, they were shipped to the basilica in 60 boxed crates and installed over eight months.

"There are only two families in the world that make smalti," Rambusch says. "Their technique is centuries old."

Using what is called the "reverse" or "indirect" method that was invented in Italy in the late 19th century, some 30 artisans created the images in reverse and affixed them on sections of special graph paper with paste made from flour and water.



LEFT The mosaic in the Basilica of the National Shrine of the Immaculate Conception, designed and installed by Rambusch Decorating Co., features 14 million pieces of Venetian glass in more than 1,000 color variations.

ABOVE The decoration of the Trinity Dome, the shrine's heavenly center point, was designed to complement the succession of domes in what is called America's Catholic Church.

The 30,000-square-foot sections were cemented paper-side-up to the dome, which is a complex geometrical shape, according to an intricate, massive map. Once in place, artisans used water, soft brushes and sponges to dissolve the paper and paste to reveal the dazzling mosaic.

"It was like putting together the pieces of a giant jigsaw puzzle," Rambusch says, adding that it took a team of 20 to handle the installation. "This method saved us a lot of time and money. If we had done this by the direct method—cementing the tiles piece by piece onto the wall, it would have taken us too long to complete the project."

The circular base of the Trinity Dome is a mosaic with the words of the Nicene Creed, which begins, "I believe in one God, the Father Almighty, maker of heaven and earth and all things visible and invisible."

The dome's quartet of pendentives, designed by St. Jude Liturgical Arts Studio, features the four biblical evangelists—Matthew, Mark, Luke, and John.

From its inception, the National Shrine, approved in 1913 by Pope Pius X, who made a personal donation of the lire equivalent of \$400, has been envisioned as a gift from American Catholics to Mary's devotees around the globe. More than 80 chapels and oratories have been added.

The Trinity Dome was dedicated fittingly, on Dec. 8, 2017, the Solemnity of the Immaculate Conception, which is the patronal feast day of the United States and the basilica.

When Rambusch gazed up at the completed dome topping what is one of the 10 largest churches in the world, he was in awe. "It gave me great satisfaction," he says. "It's a truly fitting completion of this dynamic, living space."



The back of the house, which has an expanse of lawn, features wooden balconies and a dining pergola.

PROJECT: SPANISH COLONIAL
ARCHITECT: FERGUSON & SHAMAMIAN

Spanish Roots

Ferguson & Shamamian recreate the vocabulary of an original Spanish Colonial house in Santa Monica.

BY NANCY A. RUHLING | PHOTOS BY LISA ROMEREIN







It started out merely as a renovation project. The owners of the Spanish-style Roaring Twenties home in Santa Monica, California, had raised their children in the house, and it had such sentimental value that they had no desire for drastic construction.

But with the kids grown up, the couple decided to make some cosmetic changes that included reinventing the master suite and changing the configuration of some of the main rooms to make them more in sync with their empty-nest lifestyle.

They commissioned the award-winning New York City-based firm of Ferguson & Shamamian Architects to create designs that respected and referenced the home's architectural style. During the process,

however, it was discovered that the 1924 structure, which lacked sufficient reinforcement in the foundation and walls, was not earthquake proof.

The design team, including interior designer Michael S. Smith of Santa Monica and landscape designer Stephen Block of Inner Gardens in Los Angeles, consulted with an architectural historian, and all agreed that the couple had little choice but to build a new house.

"It wasn't easy for us to get special permission from the city to tear down the old house," says architect Oscar Shamamian, AIA, founding partner of the firm. "But ultimately, it was determined that the life safety issue far outweighed preservation."

There was one enormous advantage to building a new house: Zoning rules allowed the architects to flatten part of the narrow, 1.5-acre rear-steep site allowing the clients to take better advantage of their land.

Because of this change, the pool house was connected to the main house under the rear lawn through a series of rooms that

include a massage room and a home gym, making it a primary structure instead of an accessory building. A flat grass lawn covers the top, enhancing the landscape.

"We were able to create what I call a collage of differing volumes that give the house a rambling quality," Shamamian says. "The staggered masses of varying heights allowed us to break down the actual size of the house while accommodating a significant program."

When designing the 12,000-square-foot, two-story house, Shamamian, and Tom McManus, principal in charge of the project, turned to the traditional Spanish Revival and Mediterranean homes that define the Southern California landscape as well as to historic Spanish architecture precedents.

"This was one of our first forays into Spanish-style architecture," says Shamamian. "And it was our first all-out Spanish-style project to use real 15th- and 16th-century elements. We wanted the details to be authentic, but they had to work in a modern capacity without seeing the modernity."

The home, which is in a private and

OPPOSITE Wooden entry gates, painted in a celadon hue, lead to the courtyard garden, a lush space whose focal point is a lily pond.

ABOVE In the living room, built-in bookcases are paneled with decorative wallpaper and feature custom-made air-return grilles whose design is based on traditional Spanish Revival styles.



ABOVE The husband's study, which has arched windows, includes an alcove for a desk, and serves as a space for meetings and media viewing.

CENTER The wife's office, which is tucked under the lower roof, is cozy and private and has a stairway to the master suite.

FAR RIGHT A towering stucco chimney, decorated with an antique medallion, creates a cozy outdoor space for sitting.



intimate setting with backyard panoramic views of a golf course in the valley below, is made of stucco and African teak.

"We used these two materials to break down the massing—in places, for instance, the top floor is all teak—and as a way to tie it to the two-story wings," McManus says, adding that African teak corbels were employed to further define the boundaries between stucco and wood sections in an elegant manner. Shamamian adds that the technique adds visual interest and allows the house "to be seen as two pieces instead of one large mass."

The house's Spanish-style roots include wood balconies, reclaimed terracotta pavers and a roof of reclaimed Spanish tiles. The windows and doors are a major defining feature: They are metal instead of traditional wood.

"Los Angeles has a history of thin metal doors and windows that came in in the 1930s and 1940s," McManus says. "We chose to use them in this project so it would look as though the house had always been there and merely had been updated with them."

In the alcove of the first-floor library, metal diamond-pattern glass windows further the old-world feel. "We wanted special windows for this special space," McManus says. "The frames are contemporary, but we designed an intricate Spanish-style pattern

based on historic designs and added leaded glass with a little bit of waviness."

The timeless theme starts at the front gates: Large and wooden and painted a green-thumb hue of celadon, they lead to the first "room" of the house, a lushly landscaped courtyard centered around a rectangular lily pond.

"Just through the gates, the sight lines lead all the way back to the golf course," Shamamian says. "Stephen designed the lily pond so it forces you to stop and look at the view before making a move." That space leads to a forecourt that features a towering stucco chimney and a pointed-arch fireplace. An antique medallion hints at a rich history. "It's a functional fireplace," McManus says. "There's a lot of soot on the back wall—you can see that the owners use it a lot."

The interior walls of the house are sheathed in stucco for a clean, contemporary/traditional look and feel. "In typical Spanish architecture," Shamamian says, "there's not much detail on the walls. So we used the ceilings to bring in geometry and structure."

The dining room, which has paneling on the walls as well as the ceiling, is a notable exception. "Michael Smith and the owners had a series of six full-length 17th-century Spanish portraits that they wanted to

incorporate," Shamamian says. "Instead of framing them, we integrated them into the architecture of the walls. The paneling acts as frames."

In keeping with the theme, its coffered ceiling features painted panels.

Antique furnishings and fixtures, including marble and stone fireplaces, create a comfortable atmosphere and form a perfect setting for the new-old elements that Ferguson & Shamamian designed.

The central stairway, a cantilevered concoction that is made of Grand Tortoise Limestone imported from China, rises amid walls clad in hand-painted vintage tiles. Its wrought-iron balustrades, inspired by historic examples, delicately attach to the sides of the risers instead of the top of the treads. "The design lightens the look and adds width to the stair," Shamamian says.

In the living room, built-in bookshelves are framed by a Spanish-style arch that divides the spaces into a pair of parlors. Their interiors are decorated with wallpaper, a 19th-century technique that complements the wooden air-return grilles that Ferguson & Shamamian designed.

During the course of the project, the design, like a house living through the ages, evolved. "Each room," Shamamian says, "has its own characteristics and idiosyncratic details. We created pockets of places to go."



BELOW Wooden beams along the roof line of the master suite create a spacious feeling.

BOTTOM A coffered ceiling and paneled walls that house the owners' Spanish portrait paintings define the dining room.



KEY SUPPLIERS

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Ferguson & Shamamian

ARCHITECT OF RECORD

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INTERIOR DESIGNER

Michael S. Smith

LANDSCAPE DESIGNER

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CENTER In the library's alcove, windows in a diamond-glass pattern bring in sunlight and a touch of the old world.

LEFT Inspired by Palladio's Basilica in Vicenza, the front facade features a single story portico with a cut-stone arcade and balustrade terrace above.

ABOVE The cantilevered central staircase, made of Grand Tortoise Limestone from China, features a custom bannister that is based on historic styles. The walls are decorated with hand-painted vintage tiles.

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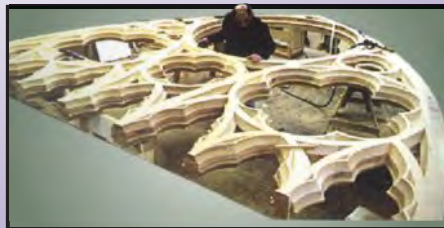
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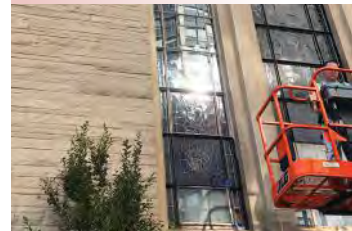
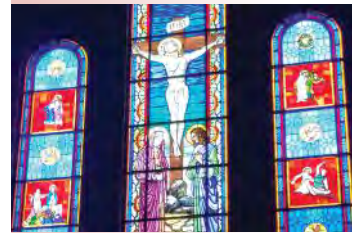


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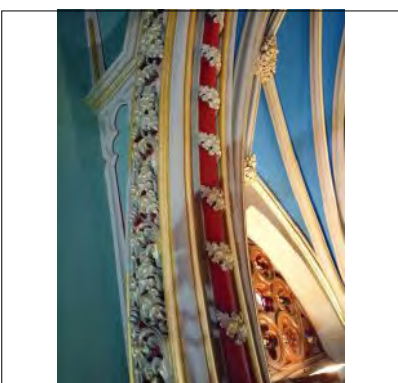
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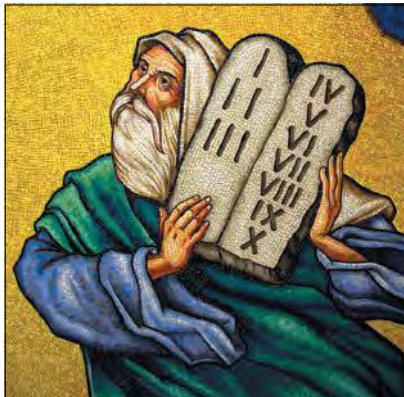
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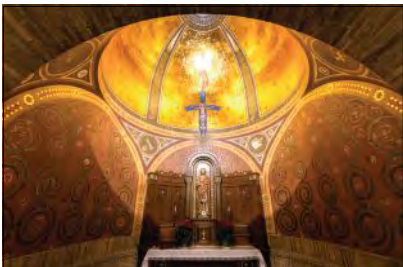
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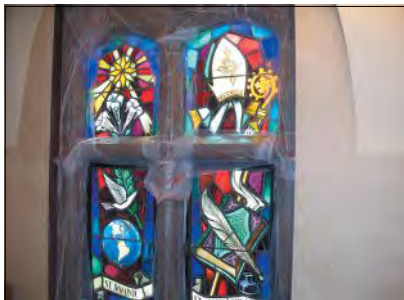
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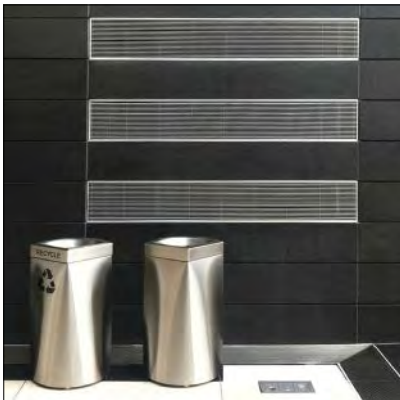
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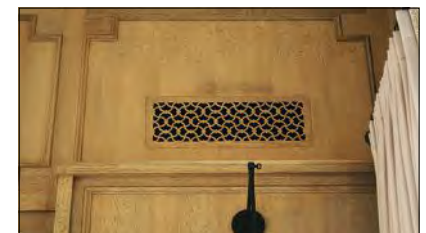
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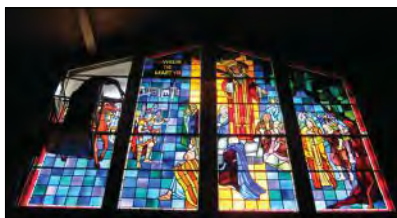
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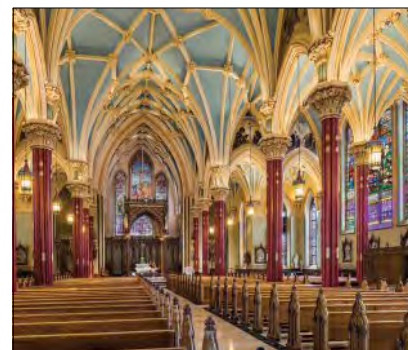
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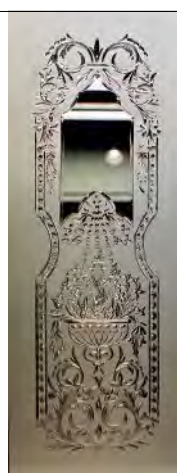
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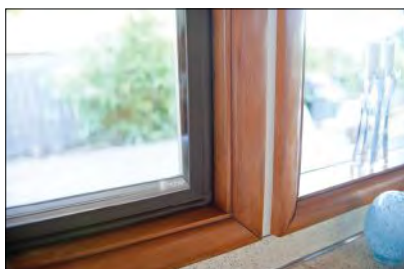
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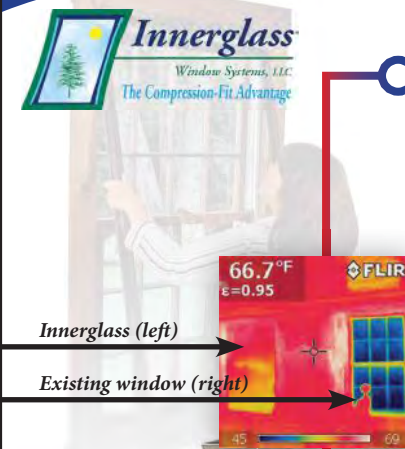


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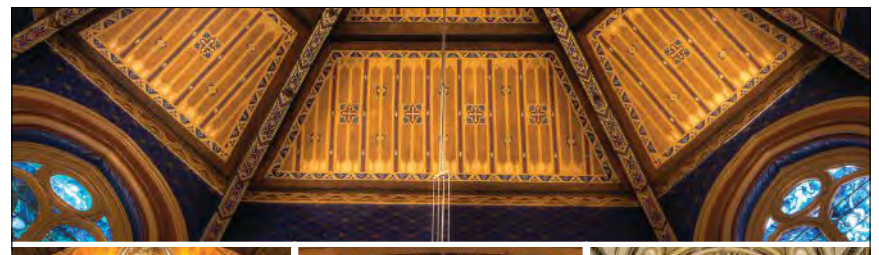


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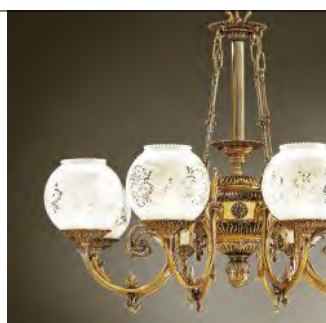
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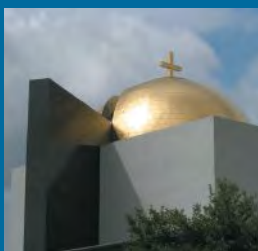
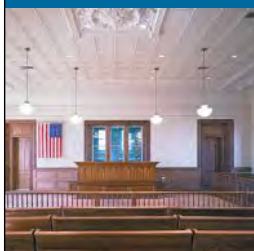
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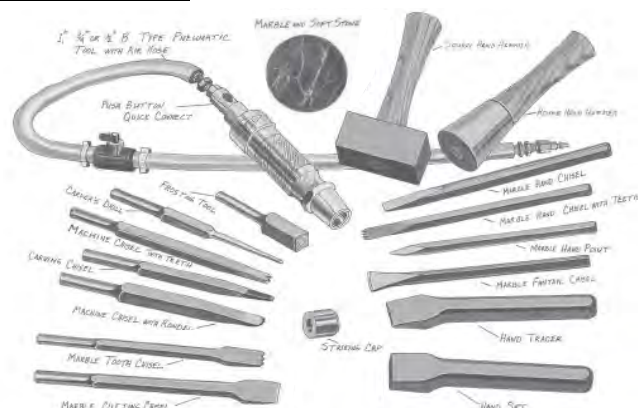
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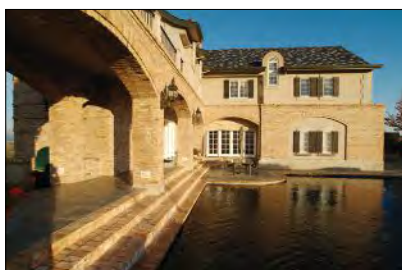
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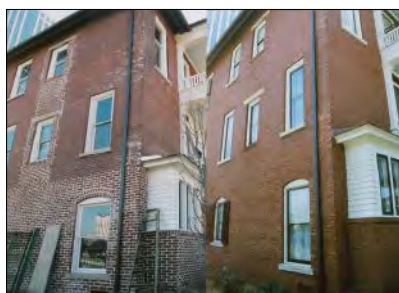
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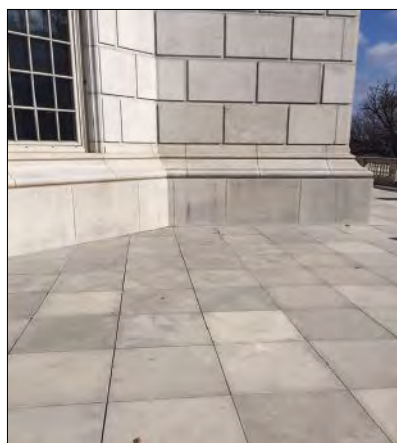
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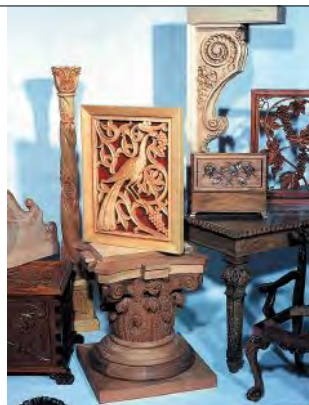
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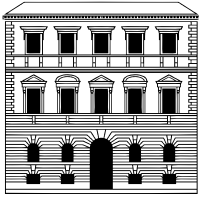
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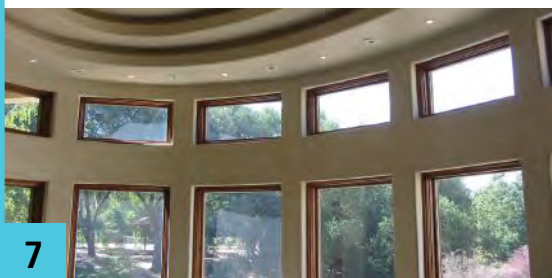
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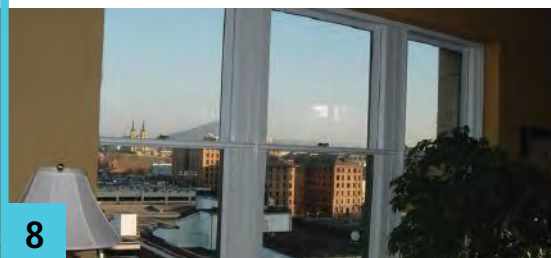
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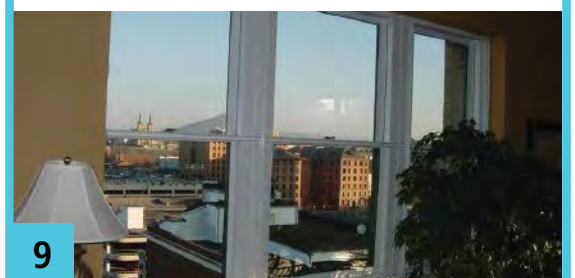
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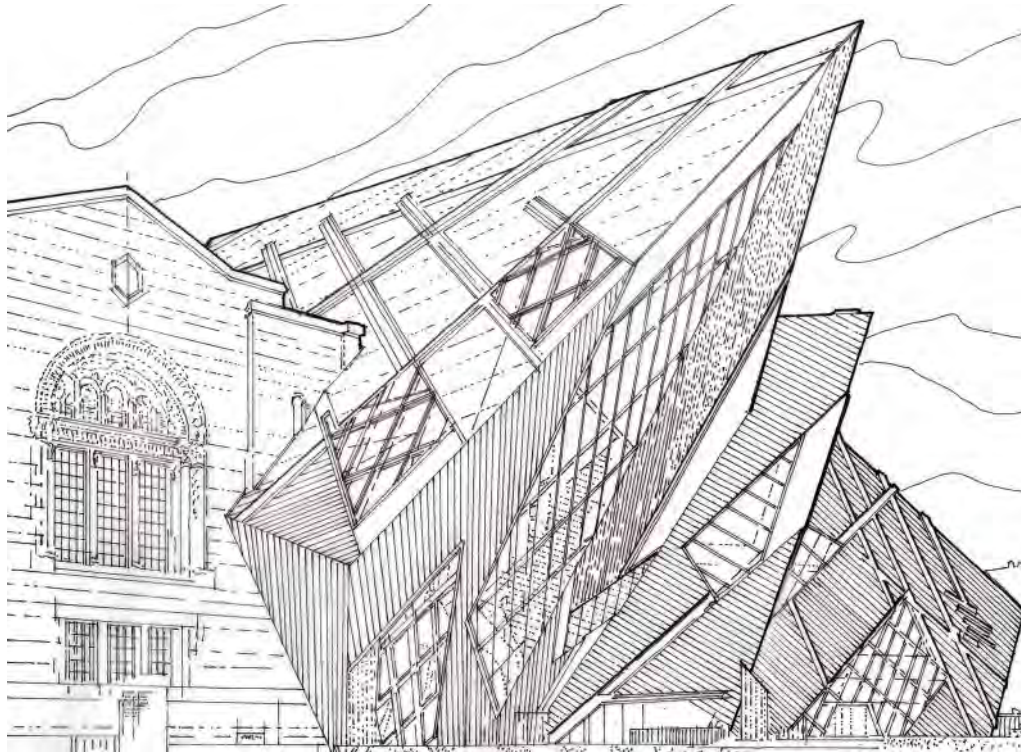
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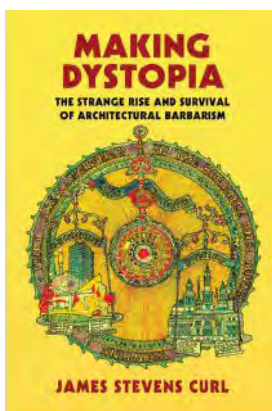
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Making Dystopia: The Strange Rise and Survival of Architectural Barbarism

BY JAMES STEVENS CURL
*Introduction by Timothy
Brittain-Catlin*

Oxford University Press,
Oxford, UK, 2018

592 pages;
72 b&w illustrations;

39 figures; \$60

ISBN: 9780198753698

CAN A TEXT ON ARCHITECTURAL HISTORY,

however thoroughly researched and brilliantly written, trigger an architectural revolution? For a discipline in ferment, this might just provide the jolt to set off an avalanche.

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This book presents a comprehensive history of the Bauhaus, of Le Corbusier, the Soviet Constructivists, etc. Those defined the “look” that architecture has conformed to ever since, within an extremely limited palette of variations. Professor Curl lays out how anti-establishment movements at the start of the 20th century generated forces clamoring for a “new” architecture. He traces the unlikely success of anti-traditional design aesthetics as they coagulated into the International Style. Much of this history as presented in “standard” texts has been falsified.

Claims for styles evolving from premodernist architects turn out to be invented. Professor Curl debunks the commonly-cited “good intentions” of modernist pioneers: The reality is a freakish mixture

of cult beliefs and ruthless egos. Most disturbing is the complete disdain for human biology. The modernists offer the building industry a cheap way of constructing massive high-density buildings for maximal profit. Grateful real-estate speculators and powerful car manufacturers exclusively promoted this architectural style in the media.

Today’s dominant architectural idiom descends directly from those early disruptive ideas, while traditional buildings remain on the banned list. Society accepts this absolutist situation as inevitable.

This iconoclastic landmark book might change the way we build from now on. It’s an outstanding work of scholarship that needs to be read by every architect and architecture student who still possesses a conscience.

NIKOS A. SALINGAROS is a well-known scientist, architectural theorist, and urbanist. He is the co-winner, together with Michael W. Mehaffy, of the 2018 Clem Labine award. The author of several books, Dr. Salingaros is Professor of Mathematics at the University of Texas at San Antonio, and directs research students on architecture and urbanism from universities around the world.

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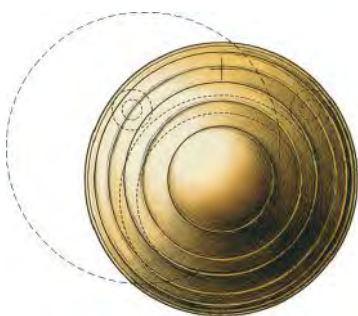
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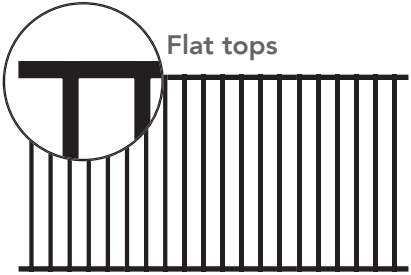
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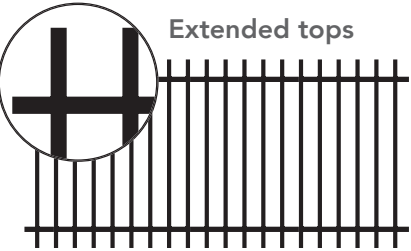
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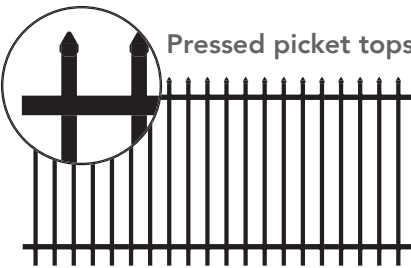
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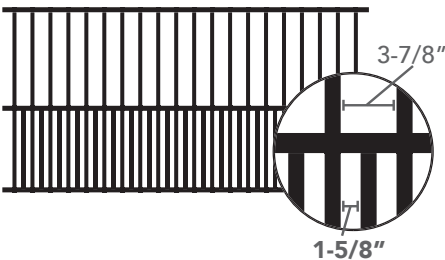
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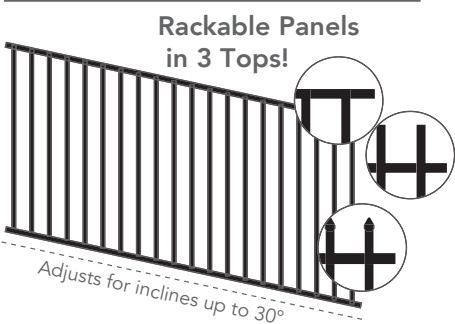
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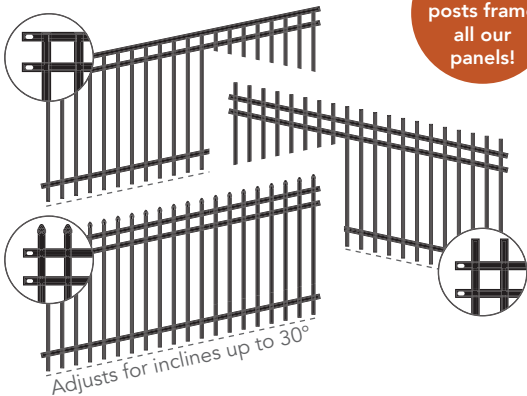
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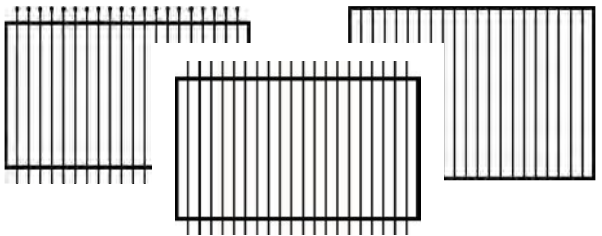
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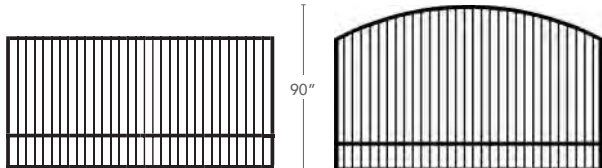
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