THE OBJECT OF MEMORIALIZATION

Responsible development informs upscale design

Modern update is good testament for stone
Vermont Danby Marble

SIMPLY TIMELESS

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During the last 70 years, our industry has had its fair share of success in the diverse uses of natural stone. Where stone was once reserved for the base of walls or decorative corners, it can now be found in a myriad of applications. Architects and designers are using stone on the exterior and interior of houses, apartments, office buildings, and universities. What comes with great success also warrants a strong warning for the future.

When installed properly, natural stone will last for generations and provide both usefulness and value to an owner. However, when not used properly, this may not always be the case. To make matters worse, repairing these mistakes can get expensive. In Chicago, one stone repair job cost more than the entire building’s renovation just twenty years prior.

This doesn’t mean we should stop using natural stone—it just means we must be sure to use the tools available to use it correctly. The Natural Stone Institute sets the standards and establishes guidelines for natural stone installation. Our technical department is available to answer questions and provide project-specific guidance. Don’t hesitate to reach out by calling them at 440-250-9222.

When writing your project specs, require that contractors completing your stonework are Accredited by Natural Stone Institute. Companies that have completed the accreditation process have gone through a third-party verification process and have been certified as the best in the industry. Reduce your liability and raise the bar for quality by choosing an accredited company for your next project.

Always remember that we are only as good as our last project. Everyone from the homeowner to the developer of a 100-story high rise is our potential customer. We all know that most everyone loves stone at first glance. Let’s each try to do a little extra in the future to keep those customers coming back for not only the beauty of the material, but the permanence of the installation.

Bob Zavagno
2020 Natural Stone Institute President
Cleveland Marble Mosaic Company
Cleveland, Ohio

NEXT ISSUE

An interior marble restoration of a 1914 Beaux Arts landmark faced challenges caused from a mid-century renovation effort in which important ornate carved finishes were discarded, and because one of the quarries identified as a matching stone resource had been closed for decades.

Inspired by massive quarry blocks and surface textures formed by the quarrying process, prominent artist Brad Goldberg creates impressive granite sculptures that would become entry portals defining boundaries for a new park envisioned to preserve a rare natural open space surrounding the Dallas-Fort Worth Metroplex.

Drawing inspiration from its surrounding mountains and local agrarian heritage, the design of a New England inn creates a building deeply rooted in its landscape thanks to a harmonious use of pattern-rich Connecticut granite on the facade, base, and terraces, while making a nod to contemporary forms of construction and detailing.
Set in stone

A POSH RESIDENCE IN THE SUBURBS OF BOSTON, MA, BLENDS LOCAL STONE VARIETIES AND HISTORIC DETAILING WITH NEW CONSTRUCTION

BY JENNIFER RICHINELLI

Photos by Damianos Photography
Inspired by some of the historic and beautiful stone architecture surrounding the Boston, MA, area, the Archangel Estate is an elegant display of the use of natural stone at its finest. The exterior facade of the 6,300-square-foot expansive residence in Brookline, MA, as well as landscape elements, are built from cut-to-size regional stone — grounding the home to its natural habitat and relating it to its surrounding environment.

“Our client showed us favorite homes in their neighborhood so we could get an understanding of styles they like, and didn’t like,” explained Laura Brooks Meyer, IIDA, principal, interior design, at Meyer & Meyer in Boston, MA. Meyer collaborated with her husband, John I. Meyer Jr., AIA, LEED AP, principal, architecture. “Although the house design is completely unique from both the interior and exterior, certain building details — especially those of the exterior stone — were inspired by lovely stone bridges that were built in and around Boston. Specifically, the Agassiz Bridge, built by H.H. Richardson in Boston’s Fenway Gardens with its natural arboretum setting, influenced the bold front archway. The center of the house focuses not only on the stone detailing, but also on the 100-year-old Beech tree located in the backyard of the bridge-like entry.”

Native Puddingstone and fieldstone were the primary building materials for the estate. The stone was applied extensively for the facade, as well as the hardscape, which was designed by the landscape firm of Pressley Associates. Stone was also specified for interior applications, such as for floors, architectural details and countertops. All of the cut stone was supplied by Swenson Stone Consultants of Hanover, NH. Additionally, Deer Isle granite was used as cap stone for the project.

“Meyer & Meyer treats sustainable materials equally with quality and permanence,” said Meyer. “This home was designed with the character of the
established neighborhood and as the ‘forever’ home of our clients and their family for years to follow. Our homes have a charm about them — looking like they have always been there even though they are newly built.

“Beside availability and price, it was important that the stone be natural to the surrounding areas, such as old stone walls in the immediate neighborhood,” Meyer went on to say. “Many old homes and public buildings used a great deal of Puddingstone, which is now very hard to find.”

To ensure a successful installation, the architect and designer viewed mock-ups of the stone prior to the start of construction. “We insisted on mock-ups on all sections of the exterior,” explained Meyer. “The weightiness of corner pieces, the shapes of the details at windows, and particularly the mortar color, were important.”

According to Meyer, some thought had to be given to the shape of the property when designing the residence. “It’s very narrow along the street, but deep in length,” she said. “To maintain a graceful street presence and the client’s program, including a large patio and pool house, the design prompted an L-shape, unbeknownst to the passersby. Stone-wise, the challenge was scaling the pieces to look naturally in place, as well as color offset, to draw attention to certain details such as over the windows.”

**INSTALLING THE STONEWORK**

Meyer & Meyer worked closely with the install crew from The Stonemasons Inc. of Westport, MA, to ensure all of the
While newly constructed, the Archangel estate was designed to reflect the historic stone architecture found in its Brookline, MA, community.

The size, color and texture of the regional stone portrays a rustic elegance that makes the home appear timeless.
stonework was secured successfully. “We see our function and responsibility as stonemasons to fulfill the design intention of the architect and landscape architect,” said David von Jess of The Stonemasons Inc. “We work to bring our technical expertise of the use of the stone to the designs and artistry of the architects.”

von Jess went on to explain that the project was designed to look like it had always been one of the original homes in the historic community. “(Therefore), the selection of the fieldstone and how the arches would be constructed was a critical point in discussion and design,” he said. “The elliptical arches are a single piece of stone. They are 30-inch-deep pieces. We built the wood frames for the arches at our shop and then cut and honed the joints of each stone — dry laying it out. Upon final assembly in place, we pinned and epoxied 1-inch stainless steel rods between the stones for structural support. The top keystones were pinned with vertical rods tied into a steel superstructure above for additional support and safety.”

According to the mason, the fieldstone veneer employed for the exterior facade of the house is a full 10 inches thick. In the landscape wing walls, the stones average 400 to 2,000 pounds apiece.

“One of the reasons we love working with Meyer & Meyer and Pressley Associates is that they always bring new challenges and details to each of the projects we perform for them,” said von Jess, adding that the project required six stonemasons who completed the job in approximately seven months, along with the hardscape. “It is always an honor and a privilege to complete projects under their guidance,” he said.

When asked how their clients responded to the finished project, Meyer said, “Tremendously! The intrigue of the unusual entry, along with the exposed Beech tree, is a novelty that has received much acclaim. Once the clients saw early presentation drawings by John Meyer, the design was, dare we say, “set in stone!” This home is one of our most recognizable designs and is a perfect example of our creative process that blends local materials and historic detailing into new construction. Best of all, it maintains the integrity of the neighborhood.”
Marble quarry wall emerges through digital dry-laid lobby installation

COMPUTER-AIDED, VEIN-MATCHED LASA WHITE MARBLE FORMS A MONOLITHIC LOBBY CORE FEATURE WITHIN THE 100 BISHOPSGATE COMPLEX IN LONDON’S TRENDY FINANCIAL DISTRICT

BY HEATHER FIORE

Photo courtesy of Raferty + Lowe on behalf of Allies and Morrisen
Bishopsgate is one of the 25 wards in London’s financial district, which was named after one of the original eight gates in the London Wall. On the eastern edge of Bishopsgate is a development of two mixed-use buildings, known as 100 Bishopsgate, which was recently designed by two local architectural firms, Allies and Morrison and Arney Fender Katsalidis (AFK). On the walls of the ground floor and lobby, a wide range of Lasa White marble was used to welcome visitors to the complex.

The 100 Bishopsgate site spans between St. Ethelburga’s Church and Camomile Street, with Clerks Lane separating the two portions. The main 55-story tower is anchored by five contiguous podium floors, which each encompass 44,000 square feet of space, while the lobby alone spans 17,000 square feet.

“While towers are sometimes conceived as freestanding buildings, often disassociated from context, 100 Bishopsgate is designed to contribute to the matrix of the city fabric and be firmly embedded within it,” said Graham Morrison, co-founder and partner of Allies and Morrison in London, United Kingdom. “Responding to the geometries of the site and adjacent buildings, its form transitions from a parallelogram at its base to a rectangle crown. Contrasting facade textures relate to this orientation, each separated by articulated corner details. Half an acre of public realm, active with restaurant and retail amenities, creates new connections and walkable routes at street level. Transparency across the entire ground floor of the tower emphasizes this permeability.”

“It is a project with an important urban dimension,” added Earle Arney, director at AFK in London, who worked alongside Morrison for five years on the project. “A newly created half-acre of public realm, enlivened with restaurant and retail amenities, provides completely new pedestrian access between Bishopsgate, St Mary Axe and Camomile Street to the north. Part of this development includes 15 St Helen’s Place, whose south facade has been retained as part of a private courtyard; the new articulated facade to the north providing entrances to the office lobby and a new gym.”

On the ground floor of the main tower, intricately designed stone walls, elevator cabs and shafts, as well as an expansive reception desk, were crafted using Lasa White marble from Euromarble S.r.l.
All of the walls — specifically the lobby's feature wall with "100" engraved into it, giving subtle prominence to the building's address — were all vein-matched to convey a solid, monolithic look. Photo courtesy of Raferty + Lowe on behalf of Allies and Morrison

"The primacy of the core is dominant and detailed to express the way it pierces both floor and soffit to reach each level [lower, middle and upper]," said Graham Morrison, co-founder and partner of Allies and Morrison in London, United Kingdom. "To reinforce this, each block of tightly jointed white marble has been selected and placed to create a continuous diagonal grain of gray veining, which turns seamlessly at each corner." Photo courtesy of Raferty + Lowe on behalf of Allies and Morrison
in Carrara, Italy, which demands attention from all angles once you enter the building.

“Suiting the prominence of its site, how the new tower meets the ground has been a fundamental consideration to the design,” Morrison said. “A generous, triple-height reception space opens out onto Bishopsgate and the new pedestrian routes created by the project. Externally wrapped in glazing, the reception’s interior is defined by dramatic Lasa White marble that wraps around the building’s lift cores, giving a contemporary and dignified presence to a significant internal space. Visible at street level, it also helps to give expression to the building’s prominence by announcing its presence at ground level.”

Morrison explained how the design concept for the lobby “expresses the core as the grounding element,” while the floors and ceiling are expressed as “plates that radiate from this solid core.” “This concept considers the light and dark of the three key interior elements: floor, walls and ceiling,” he detailed. “The core has been designed to appear as if a solid block of marble was extracted from a quarry and displayed from floor to ceiling. The floor is a continuous stone surface from the paving of the exterior public realm to the interior with black granite laid in a rectangular module. The floor junction with the core is separated, allowing the marble to appear as if it emerges from the ground as a solid form. “The primacy of the core is dominant and detailed to express the way it pierces both floor and soffit to reach each level (lower, middle and upper),” Morrison went on to say. “To reinforce this, each block of tightly jointed white marble has been selected and placed to create a continuous diagonal grain of gray veining, which turns seamlessly at each corner.”

All of the walls — specifically the lobby’s feature wall with “100” engraved into it, giving subtle prominence to the building’s
More than 16,000 square feet of the Losa White marble, which came from the renowned Carrara region of Italy, was supplied by Euromarble S.r.l. Photo courtesy Allies and Morrison

The vein-matched pattern for all walls was made possible using Euromarble’s new, patent-pending virtual dry-laid system, according to owner, Roberto Canali. Each slab was scanned and digital dry-lay imagery was produced to match each cut slab background and marble vein to give a continuous appearance. Photos courtesy of Euromarble S.r.l.
address — were all vein-matched to convey the solid look that Morrison describes, a feat that took a lot of time and planning to achieve. The stonework was completed by the London-based stone specialist contractor, Szerelmey, Ltd. “The wall cladding installed is the result of an interesting and unusual process,” said John Guest, senior contracts manager at Szerelmey, Ltd. “Lasa is a white marble with a distinctive, smoky gray vein pattern. The architect’s design intent was for the central core of the reception lobby to appear as though cut from a single, huge block, with the veining appearing to run at 30 degrees on the front and back core walls, and horizontally on the sides and lift lobby walls. “In order to achieve this, blocks were carefully selected for background color and general appearance before being

“All stones were individually fixed back to the concrete structure, with the exception of the east wall,” Yennawar said. Photo courtesy of Raferty + Lowe on behalf of Allies and Morrison
transported from the Italian Alps down to Tuscany,” Guest explained. “At the factory, the blocks were slabbied and photographed as they passed through the honing line. This allowed for a ‘jig-saw’ of pieces to be created by positioning the stone cut size for each piece, according to its veining, thus creating the illusion of long, sweeping marble veins.”

To add texture to the diagonal, striated pattern, a waterjet finish was also applied to the marble. “These walls express the monolithic form and the marble has a natural, though uniform, pattern and minimal 2-mm joints,” Morrison said. “As the marble turns into the lift lobbies, the pattern becomes horizontal to express the ‘cuts’ into the monolith block, and the finish becomes eggshell to express the cut.”

More than 16,000 square feet of the Lasa White marble, which came from the renowned Carrara region of Italy, was supplied by Euromarble — 14,440 square feet of 3-cm-thick panels for the walls, as well as 1,700 square feet of cut-to-size pieces with honeycomb backing for the elevator cabs/shafts and reception desk.

“As we usually do in our projects, we bought the material directly from the quarry in blocks and slabs. Then we developed the overall marble design of the cladding, trying to rebuild the face of the quarry in all its own different faces,” said Roberto Canali, owner of Euromarble in Carrara, Italy. “This idea, and then the proposal, came during the visit to the quarry, where we realized how beautiful the natural veining was with its different inclinations. The goal was to obtain the monolithic effect of the marble, as per the natural pattern completed by Mother Nature.”

The “monolithic effect” of the marble can especially be observed in the elevator shafts, where the continuous veining was carried to give the appearance of solid marble being carved to reveal the elevator doors. Large-format marble panels, which span 1200 x 1960 mm (~4 x 6 1/2 feet), convey the appearance that the stone has been pushed away from the monolith when the elevator doors open, providing an interesting transition from the walls.

The reception and landlord desks, which are positioned directly in front of the feature wall with “100” engraved into it, also embrace this monolithic design concept, and were created to mirror the core-like wall. According to the architects, the main reception desk was designed as a “single linear element on the north side of the core,” while the adjacent landlord desk was designed as a “solid marble block penetrating the floor with a perimeter recess.” The top and sides of the reception desk are carved out of solid marble, so visitors touching the desk are conscious of the solidity of the material.

ENSURING THE DESIGN AND INSTALLATION ACCURATELY MET DESIGNERS’ STANDARDS

The vein-matched pattern for all elements was made possible using Euromarble’s new, patent-pending virtual dry-laid system, according to Canali. Each slab was scanned and digital dry-lay imagery was produced to match each cut slab background and marble vein to give a continuous appearance. A scale model of the digital dry-lay composition was also produced to check the configuration of the veins.

The final procedure was completing a true-size physical dry-lay in Carrara, where each stone was individually inspected for quality and finish, enabling the entire team to inspect and ensure the design accuracy prior to the installation in London.

“Each piece was unique,” Guest said. “Even though size-wise, there was a degree of repetition, aesthetically there is no repetition, so each piece could only go in one place. Thicker pieces were also needed for the substantial number of carvings ("100") and they were so big that they spanned over multiple pieces, so aligning the tile perimeters and the carvings inside was a challenge.”
The final procedure was completing a true-size physical dry-lay in Carrara. Each stone was individually inspected for quality and finish, enabling the entire team to inspect and ensure the design accuracy prior to the installation in London. Photo courtesy Allies and Morrison

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For the entire installation, an anchoring system was utilized. “The wall panels were fixed with external cladding, with a cavity about 95 mm, mechanically fixed and restrained with stainless steel brackets,” Guest said. “All stones were individually fixed back to the concrete structure, with the exception of the east wall. The walls were so long and the substructure movement such that we had to cope with differential movements and long-term creep (as it is a 50+ story building, the bottom of the core does creep quite a bit with all that weight going down it).”

There are various causes of movement in buildings. They may be identified as those caused by loads, temperature, moisture changes, chemical action, differential settlement and vibration. The movement due to load may be further subdivided into an instantaneous (elastic) component and a time-dependent component, which is usually referred to as “creep.”

“The core, which normally is concrete, was a mix of concrete and secondary steel on one end,” Guest added. “We designed and installed the secondary steel; this of course behaved differently because the steel did not have the 50+ stories bearing down on it, so no long-term creep happened in that part.”

Despite the variety of intricate processes required for the design and installation of 100 Bishopsgate, the project was successfully completed in 2019 and has received various accolades, including a 2019 Pinnacle Award of Excellence in the “Commercial Interior” category from the Natural Stone Institute.

“The architects valued the expertise the stone importers brought to the project and their dedicated team who helped realize the concept through their careful composition of the digital dry-lay process to match the marble background and veins,” Arney said. “It is for all these reasons that 100 Bishopsgate is a significant project to the architects on the team.”

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**100 Bishopsgate**
**London, United Kingdom**

**Architects:** Arney Fender Katsalidis, London, United Kingdom; Allies and Morrison, London, United Kingdom

**Interior Stone Designer/Installer:** Szerelmey Ltd., London, United Kingdom

**Stone Supplier:** Euromarble, S.r.l., Carrara, Italy (Lasa White marble)
The object of memorialization*

TO REMEMBER SIX PEOPLE WHO LOST THEIR LIVES IN A DEVASTATING DEMOLITION GONE WRONG ON JUNE 5, 2013, A LOCAL ARTIST AND ARCHITECT CAME TOGETHER TO CREATE A ONE-OF-A-KIND MEMORIAL USING PENNSYLVANIA AMERICAN BLACK GRANITE AND GEORGIA GRAY GRANITE, WHICH WILL STAND AS A LASTING TESTAMENT

BY HEATHER FIORE

On June 5, 2013, an unimaginable, yet preventable tragedy struck downtown Philadelphia when a four-story wall of a building undergoing demolition collapsed onto a neighboring one-story Salvation Army Thrift Store at the southeast corner of 22nd and Market Streets in Center City, trapping a number of people under the rubble. The result: six innocent people dead and 14 others injured.

The six people who unfortunately lost their lives that day were 24-year-old, Anne Bryan, an art student at the Pennsylvania Academy of the Fine Arts (PAFA) and daughter of Philadelphia City Treasurer, Nancy Winkler; 24-year-old, Mary Simpson, an audio engineer who was on a shopping trip with Anne Bryan; 35-year-old, Kimberly Finnegan, a cashier working her first shift at the Salvation Army Thrift Store; 52-year-old, Roseline Conteh, a local nurse and immigrant from Sierra Leone; 68-year-old, Bobor Davis, who worked for the Salvation Army for five years; and 75-year-old, Juanita Harmon, a retired secretary at the University of Pennsylvania.

After experiencing something no parent should ever have to, Winkler and her husband, Jay, spearheaded the formation of the June 5th Memorial Committee to create a memorial at
the site of the building collapse. "The memorial committee included many influential Philadelphians — from city planners, historians, educators, graphic designers, horticulturists, developers, builders and others from the local community who were shocked with the fact that this happened in Philadelphia," said architect, Scott L. Aker, AIA. "That’s how I got involved. I was brought into the memorial committee along with Harris Steinberg, FAIA, who was teaching at the University of Pennsylvania (UPenn). And with the encouragement of UPenn psychologist, Gordon Bermant, who was my thesis advisor for my Master of Science, the memorial committee asked me to give a presentation talk on my memorial research for a design competition that would help frame the prompt to select an artist (to design the memorial)."

The local artist who was ultimately selected, Barb Fox, was taking a week-long summer art course at PAFA with her son. "This happened a week before the class started and I just was dumbfounded by it," Fox said. "I was horrified by it, especially reading that there were young people involved and an art student from PAFA had died. The competition had come about the following spring, in April of 2014, and it was open to people from PAFA who were on the faculty or who had some association with the school as students or former students.

"The first thing that was required for anybody who wanted to propose for this was to attend Scott Aker’s presentation at PAFA, which was called, ‘The Object of Memorialization.’ And I couldn’t go," Fox went on to explain. "I’m an art teacher and I couldn’t take the day off, so I said to my son, ‘Can you take the day off from school and please go see this talk and bring me any materials?’ He went and came home with everything and I started looking through it, and I was really excited. I hadn’t met Scott at the time, but I worked through the different components of the competition, and in late August 2014, I got a call from PAFA telling me that I was to meet Scott Aker at the University of Pennsylvania. I had no idea, at this point, that they had chosen my work or anything. But, our first meeting was so fun, and we’ve been collaborating ever since that point of the project."

"Before I came up to the University of Pennsylvania for my Masters of Science studies, I was already a licensed architect," Aker added. "Barb and I had such a great collaboration together in the early stages that the memorial committee strongly encouraged me to become the architect for the June 5th Memorial. Following the compilation of my one-year MS degree, I was planning to move forward to pursuing a PhD, but I decided to put it on pause to take on this important project, and provide architectural services, pro bono.”

Initially, Fox proposed one large stone sculpture to serve as the memorial, but after learning more about natural stone, its inherent weight and all of the nitty gritty details involved with creating large-scale memorials from a local stone consultant, her idea shifted to incorporate several separate stone pieces.

"When I was working on the proposal for this memorial, before I became the artist for it, I didn’t know anything about granite," Fox said. “I looked online for local memorial companies and I saw that Malvern Granite was close by, so I called the owner, Mike Scheibe. He was really happy to have me come over and he gave me a tour of all of the different stones that he has.

"He has sort of a graveyard set up outside of his office so you can see different samples," she went on to explain. "He brought me inside and I asked, ‘So what would you use?’ I said I would like things to be local because this happened in Philadelphia and he said the best choice would be the American Black granite; he explained how it’s black with little white veins running through it. He gave me a sample of the black granite and said that one reason he recommended it was because it really shows the lettering more than some other
types of granite. That’s why it’s often used for memorials. I also wanted to use black because of Maya Lin (an American designer, architectural designer and artist who works in sculpture and land art, who is well-known for designing the renowned Vietnam Veterans Memorial in Washington, D.C., which features black granite on the Memorial Wall).”

Scheibe, who owns and operates Malvern Granite, LLC, in Malvern, PA, showed Fox a variety of different granites that could be used for the memorial. “The American Black granite, which is quarried in French Creek, PA, stood out to her,” he said. “One of the girls who was lost in the accident was from that area, so it was a real special point that we stuck with.”

Scheibe helped Fox and Aker with the design of the June 5th Memorial, explaining how it would work with the American Black granite, and aided with the concept drawings. “We met a few times and had gone through all of my expertise and what was going to work (granite-wise),” Scheibe said. “I guided them on the grays and the things for the back wall and what was going to give a good contrast.”

“Mike showed me other types of granite, and some have very busy patterns,” Fox added. “He showed me what the typography would look like...
on those stones, and I said, ‘Oh, I see.’ He also took me to a big memorial he designed in the Paoli Battlefield Historical Park & Paoli Memorial Grounds (in Malvern, PA), which used American Black granite.”

MODIFYING THE ORIGINAL DESIGN

After learning about all of the different types of granites and their properties, Fox selected two types of granite to create the memorial — American Black granite and Georgia Gray granite, which were both supplied by Structural Stone, LLC, in North Kingstown, RI.

“The sculptural part was initially my proposal, but it needed to be modified,” Fox said. “There was a whole collaboration of different people in the beginning that informed what the finished piece was going to be. So I worked on making models to bring in and present to a panel. From there, Scott started doing three-dimensional renderings, and then that’s when the fun started. It was so exciting.

“Initially, the design was going to be flat and in one particular area of this lot, which had been preselected,” she further explained. “Then we found out where the victims had been located, and that new information changed everything. I thought it was really...
The American Black granite used for the memorial was quarried from Rock of Ages' French Creek quarry in Elverson, PA. Photo courtesy of Scott Aker, AIA

important, and Scott agreed, that we move the sculpture to this area. And then we talked about breaking it up. The sculpture was one solid block of granite and then it became three pieces, but with the initial, basic shape.”

The June 5th Memorial features three free-standing pieces of American Black granite — a Menhir-inspired layout — to commemorate the six victims, with etchings of their names above six different-colored glass windows and with other special features, complemented by a backdrop wall composed of Georgia Gray granite. The back wall “frames the space, points of memory and areas of activation” for this living memorial in the city, according to Aker.

The American Black granite, which was used to construct the free-standing pieces, was quarried from Polycor, Inc.’s French Creek quarry in Elverson, PA. “We went to the quarry to film the extraction of the 12-ton block of American Black granite. The three stones were cut out of that single block of granite,” Aker explained. “We worked with the fabricator on how it was going to be divided and cut because there are three different-shaped panels — the two end pieces and the one central panel that has beautiful, subtle movement that captures the spirit of Barb’s designs in such a profound way. It was really important for Barb and her piece, as well as for the city of Philadelphia, to have this stone come from Pennsylvania, which was Barb’s wonderful idea. We even did a full-scale mock-up of the memorial to help with the approval process with the Philadelphia Art Commission. Barb, with her amazing background in art and theater set design, made a replica out of plywood. It’s incredible how she was able to depict the granite texture on a sheet of plywood. We used this granite-painted plywood to get a sense of the full scale of this monument during our onsite mockup.

“We wanted to create a sense of hierarchy with the memorial sculpture, being that high-polished American Black granite,” Aker went on to say. “The rest of the park also uses granite,
but the Georgia Gray granite we used was something that could contrast the American Black granite and support it as the backdrop. We also used granite for the ‘identity wall’ (the rear wall behind the memorial sculpture), which is in some ways a representation of the wall that collapsed, built back in a special, meaningful way (that is clad with high-polished Georgia Gray granite). Then, where we have the granite touching the ground in the planter beds, we used a rough-, saw-cut finish. We also used a thermal-flame finish for the granite step — the one threshold step that you come up when you enter into the park on the opposite side from the memorial stones.”

With the Georgia Gray granite used for the backdrop and identity wall, Aker and Fox pondered how to give it some texture and movement to some other locations in the memorial park, which is why the three different finishes were chosen. “The focus was on the sacred area, with Barb’s sculpture, and the meaning behind it. That’s why the Georgia Gray granite is appropriate,” Aker said. “Barb and I went back and forth about the typography etched in the sculpture and the walls — the American Black granite versus the Georgia Gray granite — and the pros and cons that come with each. For example, when you use gray granite, there is less legibility with it when you do etchings. We came to terms with the fact that the legibility on the gray granite does change throughout the day. And we also discussed the inspiration of Maya Lin. We feel that’s why she chose black granite (for the Vietnam Veterans Memorial) and that’s why Barb picked it as well. It has a sense of permanence. No matter what the environment is like, you can really read the lettering very well in all seasons throughout the day, whereas the gray granite is kind of subjected to the morning light, mid-light, sunlight and seasonal light, but that’s okay. The back wall tells a different story.”

As Aker explains, three different finishes were selected for the Georgia Gray granite in order to highlight the different aspects of the memorial and also complement the American Black granite featured on the forefront — high-polish, thermal-flame and rough-cut — a decision that was, in part, guided by Scheibe. “When you engrave, you want the letters to stand out from a distance, and if the stone has a lot of movement, you don’t get that contrast and you can’t see the letters,” Scheibe said. “The lettering on the three pieces itself is not cut in deep — we call it ‘skin’ or ‘frosted’ — which gives you contrast without additives. They put walnut hulls in there to help brighten it, as well as some silica materials, which are all natural. When you sandblast, it gives you light gray opposed to the darker gray, which is polished. “The granite itself, other than the cutout pieces where the different colors of glass are, is all the same piece of stone,” Scheibe went on to explain. “There are no inlays. We were able to get the contrast with those thinly cut letters. If we did it v-sunk or deep lettering, the letters would’ve disappeared.”

The typeface used in the memorial sculpture and seen throughout the park is called “Sackers Gothic.” “I had admired this font, which I saw in The Canadian Firefighters Memorial in Ottawa, Canada,” Fox said. “I then contacted the typographer, Richard Hunt, an associate professor of design and graduate studies at Ontario College of Art & Design (OCAD) University in Ontario, who generously donated his time and expertise to the layout of all of our typography.”
The June 5th Memorial’s “sacred area” is identified by the location of the victim markers. The phosphorus glow aggregates set in the concrete creates a “galaxy-like” spiral formation around the victim markers, inspired by the Fibonacci sequence. Photo © Jeffrey Totaro

INTRICATELY DESIGNED FEATURES

The three pieces of American Black granite, which each stand about 8-feet, 8-inches-tall and serve as the frontispiece of the memorial, incorporate six different-colored glass windows to signify each of the victims, which was a critical part of the design. “Just before I met Scott, my idea was to create a memorial that was personal for the victims and the families, but to also have it be universal,” Fox said. “I was thinking about that and I thought about the idea of colored windows, so the first thing I did was learn about glass. I started calling people all over the world that I found on the Internet to find out about glass and how to fabricate specific colors of glass.

“The idea of the glass was that the six victims’ spirits would be housed in these empty spaces in the granite,” the artist explained. “The families would choose a color that meant something to the victim or their family; that was the personal element of it. For the universal element, there’s another window at the very top (of the middle panel) that is actually angled upwards so you can look through it and see the sky, and that one doesn’t have glass. Above that window, it says, ‘For those we remember.’”

After the glass aspect was resolved, Fox and Aker began to work out the technical details of the granite panels and how they would be anchored to the ground. “I didn’t end up coming up with a solution to that, but I had an idea that they would sit on some kind of pointed anchors,” Fox said. “Mike Scheibe said that we had to make it so that a bulldozer coming through wasn’t going to knock it over. That was a challenge, but the engineers and Scott came up with solutions for that.”

Another unique feature both designers worked on was the illumination of the colored glass windows. An innovative routing technique was invented to run fiber optics through the three American Black granite panels to illuminate each colored window at night, so they would be visible all the time. For each window, one cubic foot was extracted from the granite to accommodate this never-done-before feature.

“The lighting was a real issue because you can’t just drill holes up into granite vertically and then suddenly turn 90 degrees. It doesn’t work,” Fox said. “To figure this out, I looked at similar projects around the world for ways to channel the lighting up the sides of the granite panels to bring light into each

The June 5th Memorial’s “sacred area” is identified by the location of the victim markers. The phosphorus glow aggregates set in the concrete creates a “galaxy-like” spiral formation around the victim markers, inspired by the Fibonacci sequence. Photo © Jeffrey Totaro
chamber. Through my initial research, I came up with an idea to cut away a part on the sides on each of the panels and bring the light up along the sides. Then, we could drill a horizontal hole into each recess.”

“For the memorial stones, that was one of the greatest challenges and an invention that we created — the fiber optic fitting. Al Borden, FAIA, CLD, MIES (The Lighting Practice), helped us design the fiber optic system,” Aker added. “To illuminate a solid piece of granite in the way that we did for the lighting, we had to invent some details that hadn’t been used before — this channeling access panel using fiber optics. Fiber optics is great because it’s just light traveling through lines and not a live wire. However, there are limits to the bending radius of the cable. It can’t bend at 90 degrees. We had to make sure that the spaces created in each panel were wide enough to accommodate the various radiuses.

“The stones also have a foundation system, which is pinned in with a concrete base,” the architect further explained. “When the stones stand on the surface, they are almost 8-feet, 8-inches-tall. But then there’s another five feet below ground, so the stones are essentially 13-feet-tall. The sidewalk is not holding them in place, but rather the foundation underneath that keeps them in place. So with all of those things — the foundation, footing and limits of the property line — it was a real challenge to coordinate not only the exact placement of the stones and position of them, but also to do the construction and get the fiber optics to work.”

After Aker and Fox decided on the location of the sculpture in the park, Aker then studied the patterns and geometry of the shadows cast on the ground by the stones to create a Fibonacci-inspired lighting sequence on the floor. “This was important because the area the memorial sculpture encircles is the special space where the victims of the collapse were discovered,” Aker explained. “Each victim is marked in the ground with a colored dot (keyed to the color of the windows) and cast into the concrete sidewalk. The stone aggregate surrounding the markers is a mixture of marble aggregate and phosphorus glow stones that illuminate at night. The victims’ location is a constellation of memories. The ‘sacred area’ refers to the exact location where people died in this totally preventable demolition collapse. For this
Each of the 5-foot-tall panels of the American Black granite memorial sculpture is set below grade and secured to a foundation system pinned together with concrete encasements. The 4-ton memorial stones were lifted by a crane and dropped into place. Photo courtesy of Scott Aker, AIA.

Roman Catholic Church of St. Stephen
East Grand Rapids, Michigan (USA)

ARCHITECTURAL DESIGN
David B. Meleca, FAIA

MATERIALS:
Botticino Classico
Rosso Verona
Giallo Atlantide
Bardiglio
Dark Emperador
memorial, we wanted to tell a story about building safety and the failure of this demolition. In demolition, you typically take things away, but in this case, we wanted to bring back the location of the bodies to this ‘sacred area.’ The cast-in-place concrete design around the victims’ markers is a spiral formation created with the Fibonacci sequence. With a reference to the stars and that kind of meaning, it’s like having a sort of galaxy on the ground when looking at the beautiful marble chip aggregate.

Aker hoped to use the gray granite that was left over from the project for the aggregates on the floor, but opted for marble chips instead because of their aesthetic value. “We did a mock-up with the Georgia Gray granite and it looked like mud; it didn’t have the lightness that we wanted to achieve because we were also using glow stone aggregates,” Aker said. “My idea was that the families would notice the star pattern, which would be the framework around the location of the main stars. Since the Georgia Gray Granite chips looked dull, we went with the marble chips. My idea was to use all of the recycled materials, but it wouldn’t have had the look we wanted.”

While the glass windows and innovative floor features presented some unique design challenges, a lot of thought was also put into the back wall. “Although currently the wall is freestanding — a cladding system was used — it could be a party wall in the future,” Aker detailed. “Philadelphia rezoned the area where we built the memorial to stand forever, but next door, a building could still be built in the future. It’s not just any other kind of wall; I treated it like it was an exterior wall of a building. It has a special, water-permeable membrane that was applied to the concrete and then stainless steel clips were used for the cladding. All of that was carefully detailed and specified following the standards of the Natural Stone Institute.”

On the back wall, Aker and Fox also added a subtle, yet striking feature to commemorate one of the youngest victims, Anne Bryan. “The last drawing that Anne Bryan did the day before she died was a sketch of the Nike of Samothrace (Winged Goddess of Victory), and there was a replica of it in PAFA, where she did a sketch of it,” Aker said. “That became the logo for the
memorial committee and also became this etching in the back wall where the donors are named. The Nike drawing was digitally fabricated, so I worked directly with Structural Stone on its execution and installation.

“Part of that challenge was how to take a sketch that was done on tracing paper and find the best place for it in stone,” he went on to explain. “We actually had to go through rounds of interpreting what each line of her drawing was and how to get the best representation of it. It wasn’t just what you saw — scanned and etched into the stone. We needed to capture the spirit of the sketch in the stone using technology. Barb and her artistic eye helped with that to really specify which line was gestural, which line was a solid fill, etc. That was a lot of fun to work on, but also complicated. We went through a bunch of mock-ups for that as well.”

The mock-up process was tedious, but well worth it, since the etching of Bryan’s sketch looks almost identical to what it looked like on paper — setting into stone that we should always value human life above development. “At first, it was a question of interpretation. They did this through a process of acid stonewashing using a laser-printed image. With this transfer paper overlaid on the stone, the fabricators could control the depths and textures,” Aker said. “When you looked at the sketch, it was a pencil sketch, so some lines were more gestural and whimsical, versus others that were meant to define contours or depth. The initial digitalization of it that I sent over didn’t translate well. When they sent back the sample, it just didn’t read right. It looked too deep in some areas, so we had to go in and change things, line by line, on the computer. I used RHINO, a digital surface modeling drawing program, where you can be really specific with each line and curve. Then we worked through the technical challenges to how this could be executed.

“Anne’s sketch, imprinted in the stone, is a special moment to experience,” Aker explained. “At the far entrance to the park is a 45-degree angle where Anne’s drawing is. As you come into the space from that side, you have to touch it and move through the park.”

“Anne’s sketch informed what I proposed as well because the overall shape of the three stones was supposed to resemble a Greek temple shape, but with a broken pediment,” Fox added. “So the top of it is flat, but it has the shape that you see all over Philadelphia, in the Philadelphia Museum of Art and Friends Meeting House and many buildings in Philadelphia, which have that Greek
The June 5th Memorial donor wall, which recognizes every individual that helped bring the park to life, is crafted from Georgia Gray granite with sandblasted lettering. Photo courtesy of Scott Aker, AIA

During the construction of the memorial, the granite cladding was adhered using kerf joints with bent stainless steel strap anchors. Photos courtesy of Scott Aker, AIA
temple-inspired architecture. That was also part of my original idea, because the six victims happened to be in one place at one time, but were from all over the world. They were here from different countries; they were different ages. That sheltering shape of the Greek temple was meant to bring them together and Anne’s drawing informed that idea.”

**A COMPLEX INSTALLATION**

Aker and Fox worked closely with the local stone fabricators and installers from Dan Lepore & Sons Company in Conshohocken, PA, located only 15 miles from Philadelphia. “We relied on the expertise of Dan Lepore & Sons, which is an amazing company,” Aker said. “The kind of work that they do, the history and their involvement in Philadelphia — you learn a lot from all of those things. Lepore donated a lot of their own time. Essentially, all the client paid for was the material. They were a huge help. They found somebody to donate the crane we used for the stone pieces. I filmed the stones being lifted up and dropped into place. It was pretty amazing to see the stones put in place because that’s what makes the park. The beautiful stone. It was great teamwork.”

From the conception of the design to the opening ceremony, which took place on June 5, 2018, the June 5th Memorial took around five years to complete. “The first year was getting the team together, orchestrating deals with the city of Philadelphia so they could purchase the land and all of the contractual things,” Aker said. “Then it took one year to design and another year to fundraise and develop. The effort and money dedicated to this project is incalculable because every sub-contractor and design team member donated their efforts. Everyone chipped in.”

Aside from the impact the memorial has had on the entire city of Philadelphia, it received a 2020 Tucker Award from the Natural Stone Institute. “I’m so happy and thankful for everything the Natural Stone Institute has done and all of its resources,” Aker said. “Without it, I wouldn’t have been able to do it.”

The memorial has also been recognized by professionals and visitors from all over the world. “I’m a professor at the University of Pennsylvania and everyone there is super proud of this project and everything it means,” Aker said. “The memorial...
has been recognized by the American Institute of Architects; for the local chapter that I’m part of, it won the highest honor of architectural excellence. It also won a ‘Light in Theory’ (LIT) Design Award for ‘Ambient Lighting.’

“Most importantly, I was there on the June 5th anniversary recently. I’m now the vice chair of The Friends of the June 5th Memorial Park (Friends Group) and we had a small ceremony/gathering and people would come just to learn about the park,” he added. “Even today, there are people who come to visit the memorial park and become emotional once they learn about the meaning behind all the elements of the memorial, including the color markers in the ground, which identify where the victims were found. It’s a powerful moment. So even two years after the opening, it’s still really touching people’s lives. It’s a special space for the city and hopefully it continues to serve as that. It’s providing a space for some of these other challenges that we’re facing today, which is also nice to see happening. It’s a space where people can advocate for the rights of people: don’t try to profit off of people because that’s how the tragedy happened. The memorial is doing exactly what Barb designed it for. We were inspired by Maya Lin and a lot of other memorials, but what is unique about this memorial is that it’s unlike any other memorial because it’s like a home in the city. It’s a space where people can come back to over and over again. It’s a gathering and discussion space, a memorial for the community.”

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<th>June 5th Memorial Park</th>
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<tr>
<td>Philadelphia, PA</td>
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<td><strong>Architect &amp; Artist:</strong> Scott L. Aker, AIA, Wilmington, DE; Barb Fox, Strafford, PA</td>
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<td><strong>Stone Consultant:</strong> Malvern Granite Company, LLC, Malvern, PA</td>
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<td><strong>Stone Fabricator/Installer:</strong> Dan Lepore &amp; Sons Company, Conshohocken, PA</td>
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<td><strong>Stone Supplier:</strong> Structural Stone, LLC, North Kingstown, RI (Pennsylvania American Black granite and Georgia Gray granite)</td>
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Reinventing the wall

FOR A CONTEMPORARY RESIDENCE UNDER CONSTRUCTION IN HIGHLAND PARK, TX, A NEW TEAM OF STONE CONTRACTORS WAS TASKED WITH THE REDESIGN, FABRICATION AND REPLACEMENT OF SUBSTANDARD LIMESTONE WALLS INTENDED TO HIGHLIGHT THE MAIN LIVING SPACES

BY HEATHER FIORE

All photos courtesy of Shands’ Photographics
Highland Park is one of the most affluent locations in Texas. With less than 10,000 residents, the relatively small town is located right outside of downtown Dallas. Together with University Park, the two towns comprise Park Cities, an enclave within the city of Dallas.

For the construction of a new 7,400-square-foot home in Highland Park, a pair of homeowners opted for a modern architectural style using materials that would withstand the test of time. “The overarching concept was to achieve an expression of timelessness expressed in traditional materials used in a contemporary manner,” said Mark Domiteaux, partner at domiteaux architects in Dallas, TX, who worked with David Cadwallader of Cadwallader Design, Dallas, TX on the design of the home.

The home’s center is focused around the main entry, which features meticulously designed walls clad in Indiana limestone supplied by 3D Stone, Inc. in Bloomington, IN. While the home embraces an open floor plan, parallel core walls define the foyer, kitchen, dining and living rooms.

When construction began on the home, the initial subcontractor was tasked with creating the limestone-clad walls. However, upon their completion, both the architect and homeowner didn’t approve of the result, which is when Dee Brown, Inc. Stone Finishes in Richardson, TX, was contacted. “The most insurmountable issue appeared in the most critical area, being the entry hall wall cladding that we first attempted to fabricate using individual stone slabs,” Domiteaux explained. “Despite the best efforts, the design was not executable in a traditional, stacked masonry configuration. We then turned to Dee Brown for their expertise. Through that collaboration, we all agreed that the only logical way forward was to fabricate precision-machined limestone wall panels.”

In late March of 2018, David Unger, a 21-year veteran of Dee Brown who currently serves as the Dallas plant manager, and foreman, William Carter,
“The overarching concept was to achieve an expression of timelessness expressed in traditional materials used in a contemporary manner,” said Mark Domiteaux, partner at Domiteaux Architects in Dallas, TX, who worked with David Cadwallader of Cadwallader Design, Dallas, TX on the design of the home.

worked on the new design to completely
revamp the look of the interior walls and
provide the homeowner with what was
originally envisioned. Robert Harris, a 23-
year veteran of Dee Brown who works
in the special projects division, was in
charge of ordering the new stone from
3D Stone, Inc.

“The existing wall was cut limestone brick,”
Carter said. “You had so many different
colors — darker and lighter pieces — and it
wasn’t uniform. They tried to miter the ends
and patch the miters. It was essentially a
brick layer doing a stone job. It wasn’t as
uniform as the homeowners wanted. Dave
Unger did most of the designing. He was
the brains of the operation.”

“There was a lot of chippage,” said Unger,
who received the 2017 Natural Stone
Craftsman of the Year Award from the
Natural Stone Institute. “We determined it
wasn’t going to have the appearance they
wanted. There was literally no variation in a
60-foot-long wall.”

Indiana limestone in the “Buff” color and
“Select” grade was specified for the new
wall design. The “Buff” color varies from
a light cream shade to a brownish buff,
hence the name, while the “Select” grade
refers to the fine- to average-grained stone
having a controlled minimum of “other
natural characteristics” and veining. Other
natural characteristics include
a few distinguishable calcite streaks
or spots, fossils, pit holes, open texture
streaks, honeycomb formations, iron spots,
travertine-like designs and grain changes,
according to 3D Stone, Inc.

“We supplied Dee Brown with 35 pieces
for a total of 274 cubic feet for this project,”
said Logan Sylvester, sales, shipping and
estimating manager at 3D Stone, Inc.

“Dee Brown then cut the panels to fit for
an interior veneer in the main entry way.”

After exploring other natural stones to
use, Domiteaux ultimately decided on the
Indiana limestone, which was fabricated
with unique, continuous horizontal
grooves for all of the walls. “All stone
options were considered before reaching
a consensus on using Indiana limestone,”
Domiteaux said. “The coloration, density, durability and workability inherent to this limestone outweighed all other stone material choices.”

Once the color and grade of Indiana limestone was selected, Harris ordered the material to Dee Brown’s Dallas facility, where special care was taken during the fabrication process to hold tight tolerances to the horizontal grooves, as well as the typical cut-to-size aspects. “Dave designed the stone to where we could make the joints disappear and lined everything up where it looked more like a solid slab,” Carter said.

“The pieces we used have between eight and ten courses of the stone in a single block of the stone,” Unger said. “It was basically like watch work. There was also some handwork to touch it up.

“We do a lot of work that is very finicky and meticulous,” he went on to say. “I let the guys know there was a zero tolerance and it worked very well. We have a good crew.”

While Unger devised the design, Carter was in charge of assembling the crew to complete the installation, which included himself, Unger and one of their best installers, Pablo Lopez. “He’s a craftsman. We get compliments on every job he does,” Carter said. “He, Dave and I went over there on June 6, 2018, and started laying walls out and coursing it up. At first, it hit the ceiling, but we figured it out.”

“The ceiling was a little bit out of level, so we had to adjust the joints a couple of feet down the walls,” Unger said.

Domiteaux designed the cladding system that was used to adhere the limestone panels to the walls, according to Carter. “It was 4-inch-thick limestone and we put false joints in it,” he said.

Domiteaux was also onsite throughout the duration of the stone installation to ensure everything went according to plan, coordinating with the fabricators constantly. “The focus was uniformity of stone coloration, perfection of the machined panels without chipping and damage, alignment and spacing of
The precision-machined limestone walls were designed and installed by the talented professionals at Dee Brown, Inc. Stone Finishes in Richardson, TX.

Indiana limestone in the “Buff” color and “Select” grade was specified for the new wall design, which was adhered using a special cladding system, designed by the architect.
In addition to designing the limestone walls, Dee Brown, Inc. Stone Finishes was also tasked with creating special stone elements in the half-bath using White quartz, a semi-precious stone from Madagascar, which was supplied by The Stone Collection in Dallas, TX. “The slab was transformed into a lavatory top/bowl assembly, water closet wall cladding, and even tissue and towel holders,” said David Unger, Dee Brown, Inc.’s Dallas plant manager, the mastermind behind the design of the stone walls and bathroom features.

The “Buff” color varies from a light cream shade to a brownish buff, hence the name, while the “Select” grade refers to the fine- to average-grained stone having a controlled minimum of “other natural characteristics” and veining. Other natural characteristics include a few distinguishable calcite streaks or spots, fossils, pit holes, open texture streaks, honeycomb formations, iron spots, travertine-like designs and grain changes, according to 3D Stone, Inc.
joints, coloration of the grout utilized and protective sealing of the surfaces without changing the coloration,” he said. Since all of the walls were pre-fabricated at Dee Brown’s shop, the installation team had to carefully transport the material into the home once it arrived onsite. “Getting the slabs up to the house was interesting,” Carter said. “We had steps to go up on the exterior, so they put together a trolley system. We also used a pump jack to set the stone. It was quite an operation.”

In addition to designing the limestone walls, Unger was also tasked with creating special stone finishes in the half-bath using a $10,000 slab of 3-cm-thick White quartz, a semi-precious stone from Madagascar, which was supplied by The Stone Collection in Dallas, TX. “The slab was transformed into a lavatory top/bowl assembly, water closet wall cladding, and even tissue and towel holders,” Unger said. “We created a stone look that looks like velvet.”

No unusual hurdles were encountered during the installation, which took about five months to complete. “Ripping down the old work was a challenge in itself because everything was finished inside of the house when we got there,” Carter said. “The guys did such a good job covering stuff up and making sure everything was good. The superintendent, Gabe (from BufordHawthorne Builders), made it easier for us. It’s always good to have a good general contractor.”

Since the home’s completion in late 2018, it has received a 2019 Pinnacle Award of Excellence in the “Residential Single Family” category from the Natural Stone Institute and has been well-received by the homeowners and visitors alike.

“The level of detailing, craftsmanship and design achieved is a constant source of amazement and appreciation by those experiencing this home for the first time,” Domiteaux said.

---

**Private Residence**

**Highland Park, TX**

**Architect:** domiteaux architects, Dallas, TX

**Interior Designer:** Cadwallader Design, Dallas, TX

**General Contractor:** BufordHawthorne Builders, Dallas, TX

**Stone Fabricator/Installer:** Dee Brown, Inc. Stone Finishes, Richardson, TX

**Stone Suppliers:**
- 3D Stone, Inc., Bloomington, IN (Indiana limestone)
- The Stone Collection, Dallas, TX (White quartz)

**Stone Quarry:** Independent Limestone Company, (Indiana limestone), Bloomington, IN

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**Building Stone Magazine — FALL 2020 | 47**
Modern update is good testament for stone

When renovating the Christ Cathedral, a variety of international limestone and marble was utilized to create a contemporary design that wouldn’t detract from the church’s purpose.

By Heather Fiore

Photo courtesy of Carnevale & Lohr, Inc.
Christ Cathedral, formerly known as the Crystal Cathedral, is an American church of the Roman Catholic Diocese of Orange, which is located in Garden Grove, CA. When the original building was constructed of reflective glass in 1977 by postmodern architects, Philip Johnson and John Burgee, more than 10,000 signature, rectangular panes of glass were used to clad the structure. The church’s founder, Reverend Robert Schuller, requested the design of the glass exterior to “open the church to heaven and the surrounding world,” and said it emulated a crystal when the light bounced off of it, perhaps unintentionally giving it its name.

Completed in 1980, the 78,000-square-foot church was touted as the largest glass building in the world, with seating for a congregation of more than 2,200. It remained the Crystal Cathedral until early 2012, when it was purchased by the Roman Catholic Diocese of Orange. In June of that year, the diocese announced that the building would now be known as the Christ Cathedral, as an extensive renovation began to revamp the church’s interior to accommodate the Roman Catholic liturgy.

The goal of the renovation was to modernize the outdated structure, while respecting the original architecture to the greatest extent possible. Renowned architectural firm, Johnson Fain in Los Angeles, CA, was enlisted to complete the project, with the help of local stone contractor, Carnevale & Lohr, Inc. of Bell Gardens, CA.
Completed in 1980, the 78,000-square-foot church was touted as the largest glass building in the world, with seating for a congregation of more than 2,200. It remained the Crystal Cathedral until early 2012, when it was purchased by the Roman Catholic Diocese of Orange. In June of that year, the diocese announced that the building would now be known as the Christ Cathedral, as an extensive renovation began to revamp the church’s interior to accommodate the Roman Catholic liturgy. (above) Photo courtesy of Christ Cathedral (below) Photo courtesy of Grassi Pietre

With a desire for a clean, modern look, the church sought to reinvent the church’s interior using materials that would be durable and cost-effective, as well as befitting the cathedral. “The client was hands-on for both the design and construction,” said Steve Chung, principal at Johnson Fain. “We listened to their needs and executed the design request.

“We met with the client, bishop and stakeholders,” he explained. “There were many meetings. It was an amazing experience. Our firm has a very eclectic portfolio, from wineries in Napa to tall skyscrapers in Central City, but this project was one of a kind.”

After reviewing several samples of different stones to use for the renovation of the interior elements with David Carnevale, president of Carnevale & Lohr, Inc., a variety of limestone and marble was chosen from Germany, Italy, Tunisia and Turkey for the various facets of the sanctuary, including the floors, walls and ecclesiastical furniture.

“David and I got to know each other very well over this project,” Chung said. “Johnson Fain was very careful with the design. We chose an overall gray tone for its neutrality. We typically get 1- x 1- and 2- x 2-foot samples of potential stones and judge by those samples, if that’s the stone we want to use. We requested David to provide us with an entire range of stones. We said, ‘give us all the ranges that are possible.’ He sent us all of the possibilities, and from that, we decided the criteria we would like to have — inclusions, vein directions, coloration and all of that. Some stone subcontractors don’t want to do that, but David was very kind and he wanted to provide us with what we were expecting. Stone is so natural and you’re not going to get the same variation with each one.”

Ultimately, the design team selected four different limestone varieties and three types of marble — Thala Gray limestone
The sanctuary features a 14,000-pound altar and an 11,000-pound cathedra crafted from Breccia Atlantic Grey marble from Turkey. For the wall behind the cathedra, an intricately designed wall was created using Arabescato Cervaiole marble from Italy. Photo courtesy of Carnevale & Lohr, Inc.

The floating 7,000-pound ambo, which was also designed with Breccia Atlantic Grey marble, was assembled from 6-inch-thick shaped panels. Photo courtesy of Carnevale & Lohr, Inc.
from Tunisia, Fossil Grey limestone from Turkey, Jura Grey limestone from Germany, the “Grigio Alpi” variety of Pietra di Vicenza from Italy, Arabescata Cervaiole marble from Italy, Breccia Atlantic Grey marble from Turkey and Carrara White marble from Italy.

For the flooring throughout the sanctuary, approximately 19,375 square feet of Pietra di Vincenza (“Vicenza Stone”) was utilized, a natural stone with a limestone structure. The “Grigio Alpi” selected has a light gray color characterized by the presence of macrofossils. The stone was quarried from Grassi Pietre’s Pederiva quarry in the Berici Hills of Italy.

Grigio Alpi inherently absorbs the light, which is one of the reasons it was chosen, since the church sought to utilize materials that would help with light glare during the day. A custom-made pattern was used for the flooring, as well as the stair treads and plinths.

“At the beginning of 2018, Steve Chung came to visit us at our headquarters in Nanto,” said Mariavittoria Grassi, commercial director of Grassi Pietre S.r.l. in Nanto, Veneto, Italy. “After visiting the quarries and viewing the blocks, he personally chose the blocks from which they obtained the slabs of Vicenza Stone in the Grigio Alpi variant. The chosen stone was cut on one side (of the block), smoothed and pre-treated. The slabs of Grigio Alpi, ready for installation, were supplied in block format and then cut to size for the flooring. For the cladding of the steps that go up to the marble altar, thicker slabs were provided.”

The design team at Johnson Fain spent a lot of time deciding which types of stones to use for the centerpieces of the church, as they needed something that was modern and timeless, but not too distracting.

“Because the church is a Catholic church, everything is worked around the altar and focused on the center,” Chung said. “The stone in the worship level was of utmost importance. The client didn’t want it to be a distraction, so we chose a gray tone that could be grounded.”
Approximately 1,600 pounds of Breccia Atlantic Grey marble was utilized to clad the cross-shaped baptismal font located near the catafalque in the baptistry, which provides a nice contrast to the surrounding white walls. Photo courtesy of Carnevale & Lohr, Inc.

Fossil Grey limestone from Turkey, Jura Grey limestone from Germany and Grigio Alpi limestone from Italy add accents to the paving around the baptismal font and catafalque, as well as the altar, areas of the Blessed Sacrament chapel and main entrance. Photo courtesy of Carnevale & Lohr, Inc.
AN INTRICATE FABRICATION AND INSTALLATION PROCESS

For the massive altar, five-step ambo and accompanying ecclesiastical furniture, including the cathedra and baptismal font, more than 37,000 pounds of Breccia Atlantic Grey marble from Turkey was used, which was supplied by Piero Zanella S.r.l. in Soave, Veneto, Italy.

The 14,000-pound altar was assembled into one piece using four, 8-inch-thick diamond-matched panels. “The altar top was supposed to be four separate pieces, but we decided to make it look nicer, so we pinned it together with tight joints, ground the face to one seamless plane, and installed it all as one piece,” said Carnevale, whose company fabricated some of the stone once it arrived in the U.S. and completed the stone installation. “I had to get a special container, which rode on the top of the transport ship because it was taller than the container.”

The cantilevered 7,000-pound ambo, assembled from 6-inch-thick shaped panels, also required extra care because of its composition. “Because it floats in the air, the ambo is bolted to a heavy steel frame,” Carnevale said. “It was not a standard installation where the floor directly supports the stone load. It’s floating, so its weight is cleverly supported by a hidden frame inside.”

Given the size and weight of the altar and ambo, as well as the restrictions of the load capacity of the floor, the Carnevale & Lohr, Inc. crew had to roll the pieces into the church and rig them by hand. “We used a lightweight aluminum cart that can hold up to 22,000 pounds for this,” Carnevale said.

Adjacent to the altar is an 11,000-pound cathedra, which is framed by an intricately designed wall composed of 29 different-sized slabs of Arabescato Cervaiole marble. Around 120 square feet of the white marble with distinctive, dark gray veins, which was quarried in the Carrara region of Italy, was utilized.

Approximately 1,310 square feet of Fossil Grey limestone was used on the chapel, narthex and baptistry floors. The Jura Grey limestone, which embraces a beige-like color, is also featured on the chapel, narthex and baptistry floors, and was used to create an altar border to complement the predominantly gray tones. About 16,500 square feet of the Grigio Alpi limestone was used on the

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The walls and cap surrounding the sanctuary consist of 6,120 square feet of Thala Gray, a Tunisian limestone with light gray tones and very subtle veining. The limestone was assembled in contiguous columns of various geometric shapes, each comprised of three pieces separated by 1/32-inch joints and meticulously matched for color and tone to achieve a monolithic look. Photo courtesy of Carnevale & Lohr, Inc.

The Blessed Sacrament chapel highlights a circular floor design composed of the Fossil Grey limestone, Jura Grey limestone and Grigio Alpi limestone. Photo courtesy of Carnevale & Lohr, Inc.
three aforementioned floors, as well as on the exterior of the chapel and baptism.

Approximately 1,600 pounds of Breccia Atlantic Grey marble was utilized to clad the cross-shaped baptismal font located near the catafalque in the baptistry, which provides a nice contrast to the surrounding white walls. “Some baptismal fonts are more like a large bowl, but in this one, they will do full-immersion baptisms,” Carnevale said.

The walls and cap surrounding the sanctuary consist of 6,120 square feet of Thala Gray, a Tunisian limestone with light gray tones and very subtle veining. The limestone was assembled in contiguous columns of various geometric shapes, spaced 1/4-inch apart with open joints, with each comprised of three pieces separated by 1/32-inch joints and meticulously matched for color and tone to achieve a monolithic look.

“All of those shapes on the wall is a different thickness, shape and width. We used pattern grouping,” Carnevale said. “The walls were challenging because of the weight of the pieces and shapes, and how they had to be attached. A specially-designed/engineered clip was used. We wanted the columns to appear as one piece, but they were three pieces each. So we used tight, 1/32-inch joints between the three pieces, all the while leaving the adjustment room for seismic movement and air conditioning ducts that travel behind.”

The fabricator said this was one of the most challenging aspects of the project, since they had to make sure all three pieces matched, color-wise. “We would mock corners up — there were unusual angles throughout — and Steve would agree and adjust the design,” Carnevale said. “You could get two pieces to match up, but then you needed a third. It was tricky to get the three pieces. We had to make sure that each strip was the same material. We didn’t want to have a different anchor for every shape, but something that could universally carry the loads, which is why we created a customized system.”

On the walls of the baptistry and Blessed Sacrament chapel, where the baptismal font is located, a unique modular system was implemented. “We used custom faceted and perforated metal panel to help with acoustics, similar to the stone in the main worship space,” Chung said. “The wall system was faceted in order to bounce the sound off of the stone, so it travels within the first level. They wanted the people to really be able to hear the sound going through it and capture
“Every one of those shapes on the wall is a different thickness, shape and width. We used pattern grouping,” said David Carnevale, president of Carnevale & Lohr, Inc. “The walls were challenging because of the weight of the pieces and shapes, and how they had to be attached. We used special-designed/engineered clips. We wanted the columns to appear as one piece, but they were three pieces each. So we used tight, 1/32-inch joints between the three pieces, all the while leaving the adjustment room for seismic movement and air conditioning ducts that travel behind.” Photo courtesy of Carnevale & Lohr, Inc.
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The cantilevered ambo required extra care because of its composition. “Because it floats in the air, the ambo is bolted to a heavy steel frame,” Carnevale said. “It was not a standard installation where the floor directly supports the stone load. It’s floating, so its weight is cleverly supported by a hidden frame inside.”

**SOURCING STONE FROM ALL OVER THE WORLD**

Although the stone came from several different continents, all of it eventually ended up in Italy for fabrication, before it was shipped to California. “For the stone selection, the project team went to Italy with David for one week,” Chung said. “We went to Carrara and Soave and looked at all of the stones and all of the mock-ups. We did some studies and made sure all of the details were getting achieved the way we were looking for.

“David has great stone suppliers in Italy,” the architect explained. “The people we worked with did very complex stonework. All in all, that was a great experience.”

Carnevale & Lohr, Inc. has a lot of relationships with stone quarries and fabricators throughout Italy, and is represented there by a man named Raffaele, who was in charge of inspecting all of the material that was used for this particular project.

“For a lot of jobs, we do dry lays. However, we didn’t do that for this project,” Carnevale said. “We did a small mock-up of the wall panels and also did a mock-up of the cathedra so it could be physically sat in to determine the right scale. The client wanted to make the cathedra mock-up out of plywood, but we instead made it out of foam on the same CNC machine in Italy that would be used to make the actual stone cathedra.”

Approximately 300 tons of stone was shipped from Italy to California in 14 different containers, which was supplied collaboratively by three Italian suppliers: Grassi Pietre in Nanto, Veneto; MarmiMar by Lazzini in Massa, Tuscany; and Piero Zanella in Soave, Veneto.

“For the most part, they didn’t want any polished pieces,” Carnevale said. “The
marbles are a little higher-honed and the limestones are a little lower-honed.”

To complete the stone installation, Carnevale & Lohr, Inc. had two separate teams of three crews each — one designated for the walls and another for the floors and other elements. “It took about eight months to complete,” Carnevale said. “We started in August of 2018 and it was completed by March of 2019. The dedication mass was held in June of 2019.”

Altogether, the project took four years to complete, with two years of design and two years of construction. The dedication event, which was attended by thousands of people, had an amazing turnout, according to Chung. Aside from the local recognition, Christ Cathedral has also received a 2019 Pinnacle Award of DURABLE NATURAL BEAUTIFUL QUARTZITE

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The altar is perhaps one of the most striking centerpieces of the sanctuary, since it appears as one solid slab of marble. Photo courtesy of Carnevale & Lohr, Inc.

Excellence in the “Renovation/Restoration” category from the Natural Stone Institute.

“Mixed with abundant natural light from the glass walls and ceiling, this stone interior has an almost ‘ethereal’ look to it, and stands as a testament to what is possible with natural stone,” Carnevale said. “The beauty, durability and flexibility of natural stone as a building material are all evident on this project.”

Christ Cathedral
Garden Grove, CA
Architect/Designer: Johnson Fain, Los Angeles, CA
Stone Contractor/Fabricator: Carnevale & Lohr, Inc., Bell Gardens, CA
Stone Suppliers: Grassi Pietre S.r.l., Nanto, Veneto, Italy (Pietra di Vicenza in “Grigio Alpi” used for flooring); MarmiMar by Lazzini, Massa, Tuscany, Italy (Arabescato Cervaiole marble, Carrara White marble, Fossil Grey limestone, Jura Grey limestone, Thala Grey limestone); Piero Zanella S.r.l., Soave, Veneto, Italy (Breccia Atlantic Grey marble)
Stone Consultant: Jeff Matthews, Trade International, Atlanta GA
Stone Setting Material Supplier: Custom Building Products, Huntington Beach, CA

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Responsible development informs upscale design

INCORPORATING ELEMENTS OF NATURAL STONE IN ITS RAW ROUGH STATE TO A SMOOTH GLOSSY SHEEN, A BEAUTIFUL AND ECO-FRIENDLY LANDSCAPE DESIGN WAS CREATED FOR A WORLD-CLASS COMMERCIAL COMPLEX ON THE OUTSKIRTS OF WASHINGTON, DC

BY JENNIFER RICHIENELLI
A fluid and sustainable landscape design, which anchors the grounds at 1775 Tysons Boulevard in Tysons, VA, just outside of Washington, DC, was achieved with two varieties of black granite. The three-component outdoor space, which was integrally designed with a 15-story building and is certified as a LEED Platinum project, includes a public park, formal drive court and engaging Bosque Garden located on top of a lower-level loading dock. The use of natural stone was driven by the developer’s request for a high-end eco-friendly property that meets the demands of their upscale tenants.

“The developer has a very strong interest in doing the right thing in terms of building,” explained Robert J. Golde, FASLA, of Towers|Golde, LLC in New Haven, CT. “Their market is very high-end Class A office space and their clientele demand quality in design, construction and responsible development.”

This particular project is prominently located at the gateway to Tysons II, a 5.9-million-square-foot premium commercial development that is adjacent to Tysons Corner metro station. A monolithic sculptural stone plinth, constructed of Mesabi Black® granite from Coldspring, is the focal point of the drive court and organizes vehicular traffic flow while also serving as a visual “linchpin” coupling the two primary exterior spaces on the site — the private Bosque Garden to the north and a more public Sculpture Park to the south.

“Durability is a big concern for us,” said Golde. “We love to work with stone because we know it is going to last. There are many other manmade materials that are less expensive, but over time they don’t perform as well. We also use stone because of its tactile quality, which has an element of human attraction to it. There are so many qualities to natural stone that far exceed other materials. If our projects can afford it then that’s what we prefer to use.”

When it came to the stone selection process, the landscape design team followed the lead from the project architect. “As landscape architects, we like to collaborate with the building architect for a seamless interconnection
between the building and the site,” Golde explained. In total, Coldspring supplied 7,800 square feet / 2,200 cubic feet, which equated to 1,850 pieces, of Mesabi Black granite for the Sculpture Park, Bosque Garden and entry court scope of the project.

COMPONENTS OF THE DESIGN
According to Golde, the design of the outdoor area was configured by the juxtaposition of the new office building and a garage that supports it. “Between those two structures is an arrival court that also serves to separate the other two more social exterior spaces,” he said. “The Bosque area is a courtyard setting that is heavily landscaped and intended for the use of the building tenants. The Sculpture Park will eventually be central to a number of master-planned buildings.

The landscape architect went on to explain that the project took advantage of a zoning incentive. “This project is near a metro station being built at the time as part of an expansion to extend the Silver Line to Dulles Airport,” he said. “As part of an incentive to build close to the metro stations on the line, with the objective of increasing ridership, zoning modifications were available for development within close proximity to a proposed station.

“A developer could build a denser development, but in return was obligated to offer other public realm improvements to offset it,” Golde continued. “A park, which would be open to the public was proffered as one such improvement for this project. The developer knew that this would be a key open space. Having a deep interest in artwork, the developer worked with the design team to select several significant pieces for the park.”

As you come into the site, you drive under the office building and enter the arrival court. “It was designed as a paved urban space more common to European cities,” said Golde. “The interest of putting a visual element in the middle led to the idea of the ‘plinth,’ a linear stone feature.

“The stone plinth was quite important that it, firstly, related to the stonework in the other two spaces, as well as the building, and, secondly, that it had a transitional...
quality to it,” Golde went on to say. “The transition is accomplished by variations in the finish of the stonework.”

The plinth is formed by randomly sized, and alternatively textured, granite veneer panels mitered to appear as a solid mass. It subtly transitions from a refined appearance at the more formal Bosque Garden to a heavily rusticated character at the end adjacent to the Sculpture Park. “Granite veneered seat walls evocative of the shifting bars of the building’s floorplate are the dominant elements in the Bosque Garden and are positioned to frame views of a sculptural specimen tree backed by a monolithic textured granite wall,” explained Golde. “The same vocabulary of granite seat walls extends beyond the Bosque to frame major outdoor sculptures in the park and a restaurant terrace along the building frontage. The largest sculpture, prominently visible from the entry drive and arrival court, is set in a bed of large beach pebbles bordered by a granite band.”

VISITING THE QUARRY

To ensure that the correct specifications for the stone were met, Golde, along with the architect and owner’s representative, visited Coldspring’s facility in Cold Spring, MN, in May of 2015. “We were concerned about the quality and range of imperfections that we could expect to see in the stone,” said the landscape architect. “Depending on the effect one is looking for this can be a difficult stone to work with. It is very dark, but it can have white marbleized veins and inclusions that show up randomly. In addition, the finish applied to the stone can significantly affect the appearance of these elements as well. We were concerned about that because we were looking for a more uniform appearance.”

The project included a variety of pieces, including a plinth wall cap and veneer, a seatwall cap and veneer, a planter cap and veneer, bench caps and veneer, paving and curb pieces. Among the variety of finishes were Diamond 8, Diamond 10, Diamond 100, Diamond 200 and Rockpitch. According to Duane Krueger, Coldspring regional sales manager, the entry drive court wall included a unique design combination of Rockpitch and Diamond 10 finishes.
A monolithic sculptural stone plinth, constructed of Mesabi Black granite from Coldspring, is the focal point of the drive court and organizes vehicular traffic flow while also serving as a visual “linchpin” coupling the two primary exterior spaces on the site – the private Bosque Garden to the north and a more public sculpture park to the south.

The largest sculpture, prominently visible from the entry drive and drive court, is set in a bed of large beach pebbles bordered by a granite band.
The design team and owner’s representative were able to view various textures at Coldspring’s facility in Minnesota to ensure the panels for the plinth had the right roughness and smoothness they desired.

Stone was chosen for the seat walls and other architectural features at the Tyson II complex for both its beauty and sense of permanence.
The plinth consists of randomly sized, and alternatively textured, granite veneer panels mitered to appear as a solid mass. It suddenly transitions from a refined appearance at the more formal Bosque garden to a heavily rusticated character at the end adjacent to the sculptural park.

“Material and finish selections were key discussion points throughout the design process,” said Krueger. “Discussions included an understanding of the color and finish options, the physical properties of each material and the natural characteristics exhibited by each of the materials. Another major discussion point included a review and understanding of edge design and finish treatment options. The proper edge treatment was critical to the proper aesthetics and functionality. Coldspring prepared a special mock-up to review slabs for color and material characteristics and finish texture and color tonality. Special pieces were fabricated showing various edge treatment options for each of the material color and finish options.”

Aside from reviewing finishes and edge treatments, Golde explained that the team at Coldspring had pulled a number of slabs out for them to inspect. “Together, we circled things that we didn’t want and also pointed out inclusions that would be acceptable and the percentage of stone surface that could include them,” he said. “Coldspring did a great job and exceeded our expectations. They are very organized and had the whole range of the stone for us to review with different finishes on it. Obviously, their Diamond 200 finish is very rough and with this stone has a range of options. That’s what is so exciting about working with stone. Using the same stone, you can provide as many different textures and finishes.”

According to Golde, the success of the project is due to a collaborative effort of all those involved. “You can’t do a project like this without every team member — from the architect to the structural engineer to the masons, owners and builders — working together very closely,” he said. “It takes a very tight team. We were very fortunate to have that on this project.”

| Sculpture Garden and Bosque at 1775 Tysons, VA | Washington, DC |
| Owner: Lerner Enterprises, Rockville, MD | Construction Manager: The Whiting Turner Company, Herndon, VA |
| Construction Manager: The Whiting Turner Company, Herndon, VA | Landscape Architect: Towers|Golde, LLC, New Haven, CT |
| Landscape Architect: Towers|Golde, LLC, New Haven, CT | Architect: Kohn Pedersen Fox Associates (KPF), New York, NY |
| Architect: Kohn Pedersen Fox Associates (KPF), New York, NY | Stone Contractor: Janeiro, Inc., Washington, DC |
| Stone Contractor: Janeiro, Inc., Washington, DC | Stone Supplier: Coldspring, Cold Spring, MN |
| Stone Supplier: Coldspring, Cold Spring, MN | (Mesabi Black® granite \(\text{®}) ; A. Lacroix Granit, Saint-Sebastien (Quebec), Canada (Atlantic Black granite) |
More than a final resting place

NESTLED IN A SERENE SETTING ON THE GROUNDS OF A PRIVATE ESTATE IN NORWOOD, MA, IS A GRANITE MEMORIAL PAVILION, WHICH NOT ONLY INCLUDES A FAMILY CRYPT BUT A SPACE FOR THE OWNER TO HOLD INTIMATE GATHERINGS

BY JENNIFER RICHINELLI

Photo courtesy of Kenneth Castellucci & Associates, Inc.
The chapel and mausoleum feature a contemporary classical design influenced by the Neoclassical movements of the late 18th and early 19th centuries. The pavilion combines Greek and Roman motifs in the austere Neoclassical style of the Greek Revival period. Photo courtesy of Kenneth Castellucci & Associates, Inc.

The palatial estate of Eric Boch Jr., CEO of Subaru of New England, has been longer than a decade in the making. Recognized as a celebrity auto czar, musician and philanthropist in the Boston area, Boch’s home in Norwood, MA, exudes elegance and refinement. The most recent addition to the property is a beautiful chapel and mausoleum, which was designed by Eric Inman Daum, AIA, and is an elaborate yet tasteful display of natural stone.

The architect explained that the main house was in the middle of a city block. "The client found the house and fell in love with it," said Daum. "He slowly started to restore it and went on to buy all of the properties on the block to assemble the estate. The chapel is on a site more remote from the main house. It is across a long access driveway of a Greek Revival-style guest house."

Forming the structure of the memorial pavilion are walls of ashlar Charcoal Black® granite that was quarried by Coldspring at its quarry in St. Cloud, MN. In total, 9,600 square feet was supplied. The thickness of the granite veneer for the exterior walls ranges from 6 to 8 inches, while the interior wall veneer is 6 inches thick.
“Our first impulse was to use Quincy granite, but it is no longer available,” explained Daum. “We wanted to make an association to that.” The architect explained that Quincy granite was a common building material in 19th century New England, which leant a somber air to its buildings. Charcoal Black granite possesses similar characteristics.

Daum collaborated closely on the project with landscape architect Brian Frazier of Brian Frazier Design in Cohasset, MA. Frazier explained that Daum took the lead to determine what stone to use. “I agreed with him on the Quincy granite look,” he said. According to Daum, Kenneth Castellucci & Associates, Inc., the stone installer for the project, had recommended Coldspring’s Charcoal Black granite. “It was a universal decision across the board,” he said. “I’ve worked with them before and was delighted to again.”

The landscape design plays an essential role in bringing attention to the mausoleum and features architectural elements, such as garden piers and walkways, as well as the paving on the porch, cut from Charcoal Black granite. “We wanted to draw people through and around the grounds,” explained Frazier. “There are two main axis — one from the main gate and the second from a farther corner near the pool.

“The original estate had a sunken lawn, which was removed at some point during the 70s or 80s when the property was subdivided and they built homes,” he went on to say. “I wanted to bring that element back. Placing it on the site in the mausoleum space made the most sense. There is a large curved granite seat wall (made from the Charcoal Black granite). It sits in middle of the space and has a vantage point of the entire site. It’s a quiet spot to sit and reflect.”

THE DESIGN

The Boch chapel and mausoleum is a contemporary classical design influenced by the Neoclassical movements of the late 18th and early 19th centuries. The pavilion combines Greek and Roman motifs in the austere Neoclassical style of the Greek Revival period.

The primary space of the pavilion is a cube, surmounted by a hemispherical dome. Four wings project from the four faces of the cube to the cardinal points of the compass, which includes: entry to the north, transepts to the east and west, and apse to the south. The north porch features four massive Greek Doric columns that are unfluted, except for a small portion below the capitals. The four visible corners of the cube are rusticated and the deep horizontal
The focal point inside the mausoleum is an elaborately detailed marble floor pattern inspired by a design in Schinkel’s Glencoe Casino in Potsdam, Germany. The pattern includes seven varieties of Italian and Spanish marble: Bianco Carrara Statuario, Fior De Pesco, Salome, Giallo Siena, Breccia Pernice, Rojo Alicante and Portoro Black & Gold.

Joints create strong horizontal shadows emphasizing the mass and weight of the stone walls and the dome above.

“The client initially wanted the building to feel dank and oppressive,” said Daum. “We considered doing it as a load-bearing stone building. In the end, with consultation, the team decided to build a concrete box and dome and suspend the granite interior and exterior from that.

“The design of the building was conceived and developed by me,” the architect went on to say. “Castellucci took the drawings and was the intermediary between me and Coldspring to get the details how I wanted. Both Castellucci and Coldspring understood pretty quickly what was necessary. The client representative, interior designer and I flew out to Coldspring where they pulled large slabs out that we reviewed and gave a range in terms of the grading, size and quantity.”

Transitioning inside, the austere exterior gives way to a more luxurious colorful interior, with varied and jewel-like shades. “Working with the interior designer, he kept saying we need to push the design,” said Daum. “Looking at a broader range of Neoclassical architecture, I found an example of a reclaimed floor. I basically took that design and blew it up to the scale of this room. Having historical precedent was very important to me.”

INFLUENCES

Daum explained that one of the most prominent influences for the memorial pavilion was the Württemberg Mausoleum or sepulchral chapel, located outside of Stuttgart, Germany, which was designed by Italian architect Giovanni Salucci. A second inspiration was the mausoleum designed by Scottish architect Robert Adam for the First Earl of Shelburne at his estate, Bowood in Wiltshire, England.

Comprising the floor are seven varieties of Italian and Spanish marble: Bianco Carrara Statuario, Fior De Pesco, Salome, Giallo Siena, Breccia Pernice, Rojo Alicante and Portoro Black & Gold. The pattern was inspired by a design in Schinkel’s Glienicke Casino in Potsdam, Germany.

“I showed Castellucci the casino photo and asked them to suggest a range of colors,” said the architect. “They provided 10 to 11 samples. The project team sat in a meeting and made choices together. That was a fun part of the process.”
The four visible corners of the cube are rusticated and the deep horizontal joints create strong horizontal shadows emphasizing the mass and weight of the stone walls and the dome above.

A beautiful pebble terrace — made from Mexican beach stones — can be seen from the mausoleum. Photo courtesy of Kenneth Castellucci & Associates, Inc.
The intricate marble floor pattern is complemented by six fluted columns carved from dark green Verde Alpi marble with dramatic veining. The columns have a diameter of 1 foot, 10 inches and are 10 feet, 6 inches high. They are composed in five stacked segments.

Beneath the sanctuary is the crypt, which can be reached by a staircase positioned at the south of the building made of Charcoal Black granite. “Originally, we were going to put the vaults in the floor, but the client decided that he wanted to use the building,” explained Daum. “The interior designer had worked with him for years, so he pushed the client. He told him that it could be used for dinner parties and intimate events, and that he should think about building a basement.”

According to the architect, from the initial conceptual design to the end of construction, the project was completed in five years. “It was put on hold for a little bit and then we came back to it. The foundation was poured in December of 2016 and it was completed in October of 2018. “This was a once-in-a-lifetime opportunity,” he said. “The client’s team was tough and it was an incredibly aggressive schedule in regards to the production of the drawings. It was a tense and difficult project at times, but having a superb contractor and stone contractor who all rose to the occasion, and Coldspring too, made it a success.”

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**Boch Mausoleum and Chapel**  
**Private Residence**  
**Norwood, MA**

**Owner:** Ernie Boch Jr.

**General Contractor:** Kenneth Vona Construction, Waltham, MA

**Architect:** Eric Inman Daum, LLC, Andover, MA

**Interior Designer:** Anthony Catalfano Interiors, Boston, MA

**Landscape Architect:** Brian Frazier Design, Cohasset, MA

**Stone Installer:** Kenneth Castellucci & Associates Inc., Lincoln, RI

**Stone Supplier:** Coldspring, Cold Spring, MN (Charcoal Black® granite)

**Marble Contractor:** Piero Zanella S.r.l., Soave, Verona, Italy

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The Bybee Prize is named in honor of James Daniel Bybee, a long standing member of the Building Stone Institute. It is awarded to an individual for a body of work executed over time and distinguished by outstanding use of natural stone in building or landscape applications.

2020 JAMES DANIEL BYBEE PRIZE RECIPIENT

Roger P. Jackson, FAIA, LEED AP is a senior Principal and President of Utah’s largest architectural firm, FFKR Architects, a 44-year-old firm of 180 employees. A native of Salt Lake City, he graduated from the University of Utah with a Master of Architecture in 1984. Mr. Jackson has been practicing architecture at FFKR for 36 years. He is a Fellow of the American Institute of Architects and has designed buildings throughout the United States.

Mr. Jackson specializes in historical restoration architecture and new work based on traditional architecture. He has been entrusted with designing many significant sacred projects for The Church of Jesus Christ of Latter-day Saints including Temples in Vernal, Utah; Nauvoo, Illinois; Laie, Hawaii; Kansas City, Missouri; Brigham City, Utah; Hartford, Connecticut; Philadelphia, Pennsylvania; Tucson, Arizona; Pocatello, Idaho, and the Provo City Center Temple in Provo, Utah. Roger is known for his remarkable sketching and freehand drawing talent, his intelligent and respectful management style, and a lively interest in people from all walks of life.

View the 2020 Bybee Award video at naturalstoneinstitute.org/bybee
Provo City Center Temple, Provo, Utah

Utah State Capital House and Senate Office Buildings, Salt Lake City, Utah
Recognized as one of the most prestigious architectural design awards, the Tucker Design Awards honor those who have achieved excellence in design through the incorporation and use of natural stone in building and landscape projects.

Congratulations to the 2020 Tucker Design Award winners!

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San Angelo, Texas
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Place Vauquelin
Montreal, Quebec Canada

McCrery Architects, LLC

Sacred Heart Cathedral
Knoxville, Tennessee

Meyer & Meyer

An American House
Hinsdale, Illinois

Scott L. Aker, AIA

Archangel Estate
Brookline, Massachusetts

June 5th Memorial Park
McLean, Virginia

MdeAS Architects

Sculpture Park & Bosque at 1775 Tysons Boulevard

645 Fifth Avenue, Olympic Tower
New York, New York

FFKR Architects

Philadelphia Pennsylvania Temple
Philadelphia, Pennsylvania
In these days of Zoom, Teams and Google virtual meetings, my quarry boots are longing for some water and stone puree. This is the first time in my 33 years of visiting quarries that I have gone 6 months without getting muddy. It is also the first time since the inception of the Marmomac stone show in Verona, Italy that I will not be wandering the aisles to see what beauties mother nature has created for all of us in the stone industry.

In my longing to visit quarries, I have instead been viewing my photo archives of various quarry visits from years past. One of the regular stops when we are in Verona is one of the largest limestone quarries in Italy. It is located near Brescia, in the Botticino basin, just on the other side of Lake Garda from Verona, in the Lombardy region.

The quarriers from Brescia tell me that it is a quality deposit of stone that is second only to the white marble deposits in Carrara. It is a high-density limestone with an absorption coefficient that rivals most granites. Brescia really is an interesting area to visit. There is a consortium of quarriers and many cut-to-size stone fabricators. There is no lack of hard work and creativity in this region.

The other thing I like most about the Botticino basin is the number of readily available stone resources and the amounts of those materials. Like most limestones, you have a good variety of colorations in the same area and a variety of quantities of fossils and other aesthetic characteristics, depending on which bench you are working. Moreover, all you need to do is move a little bit and you can come face-to-face with some of the most beautiful brecciated marbles — breccia in Italian. I like to refer to the breccia family as the beautiful petrified landslides. Breccias are known for their ornamental appeal. Geologically you will see large clasts in the stone that seem to have been broken up or mixed with a cement mixer. These clasts usually have jagged edges, not rounded.

Breccia materials are unique and beautiful. They are usually the “showcase” materials in altars and in important features of monuments around the world. For interior designers, I like to use the trick of designing with stones from the same area. They might have different tones, but often they are complimentary colors and look great on any installation. Breccias from the Botticino area are like this. One can use Botticino Classico for large areas and a nice Breccia Oniciata or another breccia for accent panels.

These are the reasons I love visiting the area with quarries and fabricators. It reminds me of visiting vineyards in California. One minute you are walking on the earth between the grape vines and the next you are taking a tour of the cantina and having an elegant wine tasting in the wine cellar. Likewise, when you visit a quarry, the awe comes from witnessing a 15,000-ton bench being removed from the wall, to the showrooms in a fabricators shop giving inspiration to designers and architects on how best to use their materials.

I will miss bringing a group of architects this year to the Botticino quarries to get our feet muddy and to give them the experience of understanding the mountains around Brescia, Italy. Ready when you are COVID. My boots are already packed.

Article and photos submitted by Vincent Marazita, Stone Trends International
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