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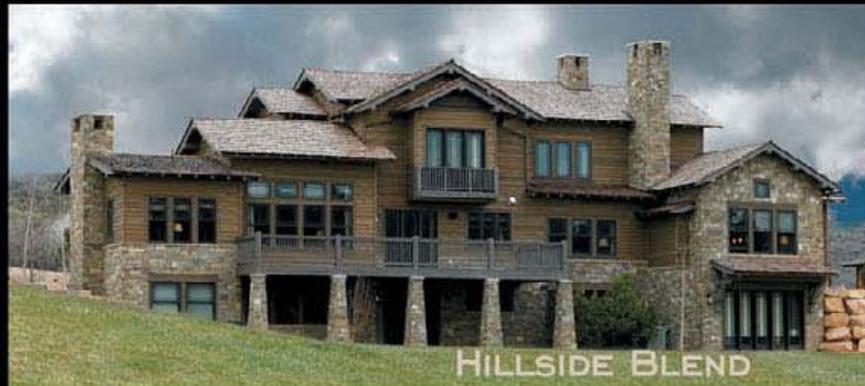
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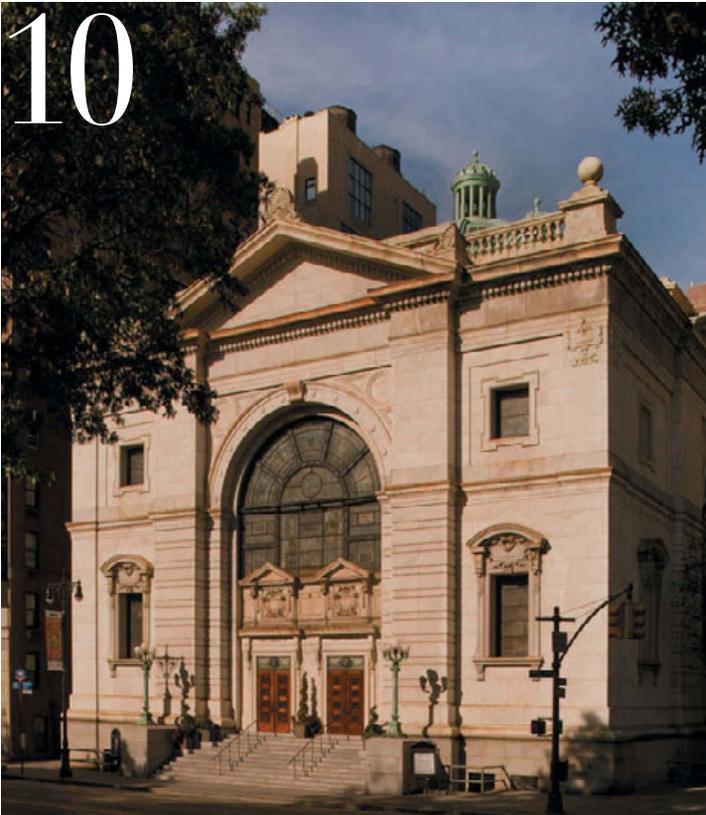


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Photo by Audrey Hall





Restoration hardware

OUR SUMMER ISSUE of *Building Stone* magazine highlights the renovation of historical structures, the tools that are used during restoration and the team of experts who ensure the authenticity and original essence. Some of the activities of restoration include cleaning, repairing and rebuilding. Yet the real story is about the people who become an authority through years of experience, discipline and passion for their craft. In the following pages you will observe how these teams of expert quarriers, historians, tool makers and masons renew the condition of an ailing structure through their combined efforts.

The Building Stone Institute also is going through a process of renewal. I am pleased to announce the appointment of Jane Bennett (formerly with Champlain Stone, Ltd.) as the executive vice president of the BSI. Jane's hard work and dedication as the chair person of the editorial committee is the result of the great strides the magazine has made in recent publications. Jane's involvement in the stone industry and as a member of the BSI board gives her the insight and experience to help achieve the BSI's commitment to the education and promotion of the stone industry. Jane is going to do what she loves in the service of people who love what they do. The whole of the BSI, with its new EVP, board of directors, membership, committees, events and affiliation with the design community is greater than the sum of its parts.

Douglas J Bachli

Douglas J. Bachli
2009 President, Building Stone Institute
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Building Stone magazine wants to hear from you!

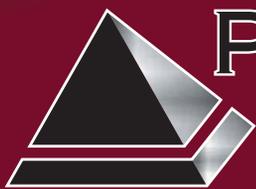
We encourage BSI members, architects and designers to submit information for publication, and we are eager for your input. Have you recently worked on a natural stone project that our readers should know about? Is there a topic you'd like to see covered in a future issue? Please e-mail details about your impressive projects along with high-resolution photos with photo credits and article topic ideas to *Building Stone* editor Colleen Raccioppi at colleenr@naylor.com.



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LETTER to the editor

HAVING BEEN INVOLVED in stonemasonry since the day my apprenticeship started in Scotland nearly 40 years ago, I feel I have a right, and perhaps an obligation, to share some observations on the stone industry in North America after 35 years here.

While I work mostly in the field of historic masonry restoration, we also, from time to time, build new stone buildings, and obviously, we have to buy stone from various quarries to replace weathered and deteriorated areas of historic buildings. We also deal with architects and engineers who specify the work to be done. We also have to bid against other masonry companies who may, or may not, have a similar workforce of properly trained stonemasons to do the work.

There are already some great groups of people out there all trying to make things better in the stone industry: The Stone Foundation, (which, although based in Santa Fe, N.M., is truly becoming an international 'tribe'), The Drystone Conservancy in Kentucky and the Drystone Wall Association of Canada attending to that side of the industry, StoneFest in Seattle and Algonquin College in Eastern Ontario—all offering opportunities for people to learn more about stone.

It is imperative that larger organizations like the Building Stone Institute and the Natural Stone Council get involved to support this new movement of masons who want nothing more than to do things right. All it would take is some effort and consultation between the various parties involved to ensure that we get it started (across our continent) properly. Once it has started, it will grow in momentum exponentially.

We need to pre-qualify everyone involved in the process, starting with the people working on the wall.

There should be no grandfathering. If you think you are a stonemason, unless you have the certificates from a recognized training program: take the tests and prove it.

If you think you have a company that can do the work required, whether you're quarry or stonecutting shop or a stonemason onsite: prove it.

If you think you are an architect or specifier who is capable of doing the job while following the internationally accepted rules and philosophy of historic masonry restoration: prove it!

Above all, we need enough people in positions of power within the various levels of government to find the testicular fortitude to demand the best! At any reasonable cost!

And, it should be considered that all I have been talking about here is general stonemasonry and restoration masonry, to go into stonecutting and stonecarving, and the numerous problems surrounding these finer incarnations of the craft would require another letter altogether!

Yours sincerely,
Robert J. Watt,
President, RJW Stonemasons
www.rjwstonemasons.com

Editor's note: Due to space constraints, the following has been excerpted from a longer, insightful letter from Bobby Watt. To read his thoughts in their entirety, please turn the page.

Tell us what's on your mind

Want to share your thoughts and feedback with *Building Stone* magazine? E-mail your comments to editor Colleen Raccioppi at colleen@naylor.com.



LETTER to the editor

HAVING BEEN INVOLVED IN STONEMASONRY SINCE THE DAY MY APPRENTICESHIP STARTED IN SCOTLAND NEARLY 40 YEARS AGO, I FEEL I HAVE A RIGHT, AND PERHAPS AN OBLIGATION, TO SHARE SOME OBSERVATIONS ON THE STONE INDUSTRY IN NORTH AMERICA AFTER 35 YEARS HERE.

While I work mostly in the field of historic masonry restoration, we also, from time to time, build new stone buildings, and obviously, we have to buy stone from various quarries to replace weathered and deteriorated areas of historic buildings.

We also deal with architects and engineers who specify the work to be done. We also have to bid against other masonry companies who may, or may not, have a similar workforce of properly trained stonemasons to do the work. That is where my observations begin.

It has long been an annoyance to me that the term 'mason' is bandied about so freely in North America. The term mason, historically, is reserved for those who build in stone. People who work with brick and block are brick or blocklayers, those who work with tile are tilers, and those who work with concrete are of various persuasions but never should be classed as masons. The English language never should be distorted to suit the latest union merger, or takeover, as it has in the case of the bastardization of these terminologies.

Then, once we have decided whether we are actually dealing with a stonemason, how do we make sure that he is properly trained? I am sick to the back teeth of bricklayers who think that because they have, on occasion, laid up some pre-cut or man-made product that is marketed as stone, that they are then allowed to call themselves stonemasons. It is just not so.

Of course, they are not always to blame for this vertical rebranding. It might well have been instilled in them by their teachers at trade school, who are using books to train them that are completely useless. And, if the teachers haven't been properly trained themselves in stonemasonry, it becomes a case of the blind leading the blind.

When I taught at a union-funded training center near Toronto in the early 1990s, the book of choice was *Modern Masonry* by a person called Clois E. Kicklighter, who, at the time it was first published in 1977, was the dean of the School of Technology and professor of construction technology at Indiana State University. And, while he might have been great at that job, he was rubbish at writing about stonemasonry.

The scant five double pages dealing with stone talk about all sorts of things that are obvious (even to a shoemaker) and of that, only about one double page contains information that is useful. And, perhaps obviously, there is absolutely nothing on stonecutting or carving. Worse, the one page on bonding is complete garbage! The other staff members at the training center were more than a little miffed when I told them so, and I think there is at least one who still is! How can you expect people to learn if you don't give them the right information? How can you expect a tradition to survive if you don't go and find the right information?

What is worse is that I always heard the line, "That is the way we do it here; it's been that way for decades." As if that is some sort of excuse. (I was so perplexed by the situation that, with the help of our provincial government and the support and input of a gentleman called Keith Blades, who is one of the most respected names in conservation in Canada, we started our own 12-week courses on stonemasonry and restoration masonry techniques.

First in a community college just east of Toronto, and then in our own building, the course ran for 8 years in the winter months.)



Remember: Just because you do something wrong for long enough doesn't ever make it right!

And that is also the case with some architects. In the course of our historic work, we are lucky enough to deal with some architects (as well as engineers and conservators) who absolutely are committed to doing the work right within the international agreements on the preservation of historic properties and sites. But as with everything else, with every ying, there is a yang. I have seen articles on award-winning projects, some in the pages of this very magazine, lauding a team of consultants and contractors for large extensions to historic buildings such as universities and other public works or new buildings on historic campuses. The bonding patterns and the style of the masonry work on the original is there for all to see and learn from, and yet, at some point there is a disconnect between what the vision is at the start and what the finished result becomes.

It is an affront to the people who built the original to completely disregard the bonding patterns and most basic rules of stonemasonry that have survived for millennia around the world, and for 100 years or more here, and build the new work in a manner that is acceptable only to those who don't know or notice the difference, or worse, to those who don't care about the difference. And of course, I'm not talking about where a more modern building is being introduced to a campus, I'm talking about where there is a conscious effort to match the original and the attempt has failed miserably. If the architect had consulted with a stonemason while in the planning stages of a project, a lot of the problems faced onsite would disappear before they happen. Such problems can negate even the most brilliant designs.

I've seen photographs—and been actual witness to—running joints, blocked joints, stacking, unbalanced groupings and countless other bonding infractions. And worse, the use of face-bedded stones on quoins and ashlar work and as jumpers in sneaked work. And that is where the quarries come in. As I said earlier, most of the ones we deal with are fantastic.

There is still a tradition of care and attention to detail that has been passed down from generation to generation and is evident in every element of the process. But, there are some who have no clue as to what their role in the masonry construction process is. Or choose to disregard it to increase production and therefore profits.

I have sent shop drawings to quarries and had the stones arrive wrongly bedded for the location of the stone in the wall. Now that is hard to do. Consider that when the stone comes out of the ground it is tagged, and the natural bed usually is marked on it by the quarrier. He is the one who sees it in the ground. This is very important in the case of some limestones, as often the natural bed is hard to see with the naked eye—unless you know what you are doing.

When the block of stone gets to the sawyer, he reads the tag on the stone, orients it on his saw bed as per the shop drawing and proceeds to cut it as ordered. Then it gets checked and sent out to us onsite for final architectural carving and/or surface finishing.

So, for us to get a wrongly bedded stone, the quarrier first has to fail to mark it in the quarry, the sawyer sets it up on his table not knowing, or caring, which way the bed is, the supervisor who is supposed to catch these things checks it, and again, neither knows nor cares about the orientation of the bedding plane, and he sends it to us. We look at it, realize what they have done, get mad, send it back and have to wait for a replacement which could take weeks in high summer, which could spark a delay claim against us, and then worry all the time we are waiting that even when the replacement stone arrives, it will be wrong also.

Now to tie the whole thing together, if we were as unscrupulous as some masonry contractors or as badly trained as some masonry crews, we would put the stone in the wall as it is, the architect would come along and, not knowing the difference, would sign off on the work. All would be forgotten until the stone starts to deteriorate faster than those around it and someone hired by the owner calls a conservator in to try and figure out what is happening.

Sound familiar? Unfortunately, it is all too familiar. Again, the usual line is that, "it will be OK until we have retired"! What sort of way is that to treat our built heritage?

John Ruskin said, "When we build, let us think that we build forever—that there is a time to come when these stones will be held sacred because our hands have touched them"

Would that not be a better legacy to leave of your time on earth?

When are we going to take that sentiment to heart as a society and train people specifically to restore and rebuild our historic monuments and glorious stone buildings to their former glory and build new ones with the same pride? It is not as if the resources aren't there.

There are already some great groups of people out there all trying to make things better in the stone industry—The Stone Foundation, which, although based in Santa Fe, N.M., truly is becoming an international 'tribe,' The Drystone Conservancy in Kentucky and the Drystone Wall Association of Canada attending to that side of the industry, StoneFest in Seattle and Algonquin College in Eastern Ontario—all offering opportunities for people to learn more about stone.

It is imperative that larger organizations like the Building Stone Institute and The Natural Stone Council get involved to support this new movement of masons who want nothing more than to do things right. All it would take is some effort and consultation between the various parties involved to ensure that we get it started across our continent properly. Once it has started, it will grow in momentum exponentially. The demand for these people is huge—in villages, small towns and cities all over the continent. But, at the moment, most public money is being held in check (at least in Canada) because the governments are afraid that there are not enough trained stonemasons and restoration stonemasons to do the work. They are right, but you have to start somewhere. While we worry about the chicken and the egg, these beautiful buildings (our architectural history) are collapsing around our ears!

The amount of work to be done by the various levels of government in the United States and Canada is staggering! Many tens of billions of dollars of nothing but stonemasonry. It could be the equivalent of the cathedral building boom of the 11th and 12th centuries!

Let's smarten up and do it right. There has been enough damage done in the last seven or eight decades to nullify the good stonemasonry working practices of the last ten centuries.

I actually apportion some of the blame to the valiant attempt in the last Great Depression to create massive public works across the continent just to keep people working—any people, working at any job, whether trained to do it or not. (Around New York City there are miles and miles of granite and schist walls and bridges that only just tip their collective hat to the rules of traditional stonemasonry. I am told that there was probably only one stonemason for every 50 other people who were hired to carry out the work.

The resulting workmanship, or lack of it, has set the tone for everything else since). But, as I said, it was wrong then. Just because it is now 80 years old doesn't make it any less wrong. Let's start turning that around.

We need to prequalify everyone involved in the process, starting with the people working on the wall. There should be no grandfathering. If you think you are a stonemason, unless you have the certificates from a recognized training program: take the tests and prove it.

If you think you have a company that can do the work required, whether from quarry or stonecutting shop to stonemasons on site: prove it. (And past jobs don't count if you have lost the qualified people who carried out these projects).

If you think you are an architect or specifier who is capable of doing the job while following the internationally accepted rules and philosophy of historic masonry restoration: prove it!

Above all, we need enough people in positions of power within the various levels of government to find the testicular fortitude to demand the best! At any reasonable cost!

Why is it that the lowest price governs public spending in our part of the world and not the best quality?

Why are competitive bids still allowed in North America when they have long been disregarded by the rest of the western world as costing too much in the long run because of bad workmanship having to be re-done 10 years down the road, instead of the 50-year cycles of repair strived for in Europe?

Remember: If you pay peanuts, you are liable to get monkeys!

And, it should be considered that all I have been talking about here is general stonemasonry and restoration, to go into stonecutting and stonecarving, and the numerous problems surrounding these finer incarnations of the craft would require another letter altogether!

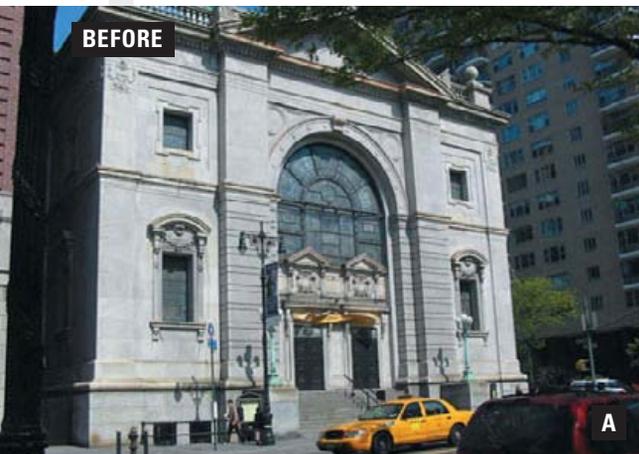
Yours sincerely,

Robert J. Watt,
President,
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Ottawa, Canada.
www.rjwstonemasons.com



need to Know

FIVE STEPS TO
SUCCESSFUL
HISTORICAL
RESTORATION
BY MARY LOU JAY



A&B. A before-and-after look at the **First Church of Christ, Scientist.** Restoration included cleaning and repointing the façade, which consisted of a Concord White granite base and water table, as well as Dover White marble façades. *Photos courtesy of Sydness Architects*

HISTORICAL STONE RESTORATION PROJECTS REQUIRE a different approach than other types of stone building projects. We asked several people who have been involved in these undertakings to share their thoughts on making them successful.

Look for experience

For historical restoration jobs, architects and designers need a restoration specialist, says Bryan Imhoff of Imhoff Engineering. "Look for someone who has done it before, who knows what to look for, what to do and who to get to do it."

Joseph Alonso, mason foreman at the National Cathedral in Washington, D.C., has given workshops showing architects, engineers and design professionals how artisans work, using angle grinders or hand chisels to open up joints, for example. "They come away with a renewed sense of how it's done, and it helps them design and write the specs for a project," he adds.

Jeff Sydness, AIA, and George Chin, AIA, principals with Sydness Architects of New York, turned to knowledgeable advisors when they began working on the restoration of the exterior and primary public interior spaces of the First Church of Christ, Scientist, an elegant, 1901 neo-classical landmark located on Central Park West at 68th Street in New York City. "We hired sub-consultants, façade experts and structural engineers who had done this type of work and relied heavily on them," says Sydness.

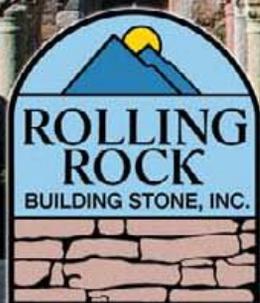
They also chose contractors and artisans with previous experience. "Time and time again you're faced with certain challenges in the field that require a brainstorming moment. You can try to anticipate all these problems, but with a historic



C. At the **Washington National Cathedral**, the architect and cathedral's oversight committee rely on the expertise of in-house masons and include these artisans in project discussions.

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PROJECT DESIGNERS SHOULD TALK WITH ARTISANS IN EACH SPECIFIC TRADE BEFORE THEY DRAW UP ANY CONSTRUCTION DOCUMENTS.

structure, once you get out there with the contractor and really start the work, you often find what you anticipated really isn't the case," Sydness says. Experienced craftsmen can draw upon techniques they have used before to resolve unexpected issues.

Understand the material

Having a basic knowledge of all the properties of a particular type of stone is essential in restoration, not only to determine how to clean existing stone but also to find any needed replacement stone to match it. "[The restoration team] should be looking not only for the color, which everyone thinks of at first, but also the grain and textures of the stone. Is it tight grain, loose grain or does it have different color variations in it?" says Laurie Wells, vice president of sales and marketing at Old World Stone, Ltd. "Another consideration is the availability of the material: how big does it come from the quarry, is it available in 8-foot lengths for a certain tread or lintel, and is it available in certain bed heights?

"They also need to know if the stone they're looking for is actually suitable as a building stone. Does it meet the ASTM requirements for durability, density, modular structure? Is it suitable for the application that they're going to use it for?" she adds.

Wells takes architects, engineers and owners on tours of the Old World Stone facilities so they understand the stone production process and how much time it actually takes to acquire a block of stone and put it through the line.

Architects can rely on quarries and stone masons to help determine the best stone choice for an historic restoration. After inspecting a deteriorated, century-old Chicago brownstone, for example, Wells recommended replacing the stone rather than repairing it. "The original sandstone, although available, was not



really suitable for construction. It didn't work the first time, so we found a better quality material that looks very similar, so the brownstone still blends with all the other homes in the neighborhood," she says.

Appreciate different expertise

"The restoration business is very complex because you need to know not only about stone but about chemistry and archaeology, too," says retired stone mason Harold Vogel. "Architects and engineers need to understand that stone artisans may have specialized knowledge that they do not."

The project designers should talk with artisans in each specific trade before they draw up any

D. A stone carver works on replacement stone for a 100-year-old **Chicago brownstone**. Although the original sandstone was available, a similar, better-quality material will help the building blend with the other homes in the neighborhood. *Photo courtesy of Old World Stone, Ltd.*

E. During the recreation of the **Sunken Road Stone Wall** at the Fredericksburg and Spotsylvania National Military Park in Fredericksburg, Va., collaboration and communication between the architects and the artisans helped avoid the potential of conflicting interpretations, opinions and recommendation. *Photo courtesy of the Dry Stone Conservancy*



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construction documents, advises Dry Stone Conservancy Restoration Manager Jane M. Wooley. “It’s important that there be a dialogue from the beginning between the project managers, site representatives, engineers, architects and people who will be installing the job,” she says.

On one project, the recreation of a dry stone wall for a national battlefield, early discussions between the architect and Dry Stone Conservancy helped prevent later problems. “The architects had a rudimentary understanding of dry stone masonry, but what they had originally designed was not buildable from a practical standpoint,” Wooley says. “They had to adjust some dimensions so the stone could fit. It worked out fine because of the open dialogue, and because the architects and engineers maintained an open mind.”

“It’s good for architects and engineers to know the procedures that craftsmen use for stone cutting techniques, stone removal, mortar joint removal and cutting out joints,” says Alonso. “Architects may specify, for example, the removal of all mortar joints. But have they ever seen how a mortar joint is removed, or tried doing it themselves?” Alonso feels fortunate that the architect and oversight committee at the National Cathedral include the in-house masons in project discussions. “We know the building really well because we’re on it all the time, and they listen to what we say because we do know it so well. I appreciate that they trust us to know what’s going on.”

Add time for approvals

Getting approvals can be a relatively easy process—on the First Church of Christ, Scien-

tist, it took just four to six weeks, and the historic groups were willing to work with the owners and the architects. Other times a renovation schedule can drag out for years.

“Historic preservation can be difficult to work with, because [preservation societies] don’t want to replace anything,” says one restoration veteran. “And if they agree to replacement, it has to be exactly what the original material was. It’s not that they’re unreasonable in their goals; it’s that they are slower to accept cheaper alternatives than others working on the project would like them to be.”

Provide clear expectations and procedures

Before a project begins, everyone involved should understand the extent of the work that needs to be performed: how much needs to be replaced, and how much of the historic material can be preserved.

“Another thing that you have to take into account is order, process and procedures,” says Imhoff. “If you’re going to repoint the mortar and clean the building, you should repoint it first, or you’ll blow a bunch of water into the wall cavity. Things like that may seem obvious, but sometimes people don’t think of them.”

Determine who will make decisions

“It’s important whenever you get to the point where you’ve got your craftsmen on-site there is one line of communication and one voice coming from both sides,” says Wooley. She recalls one project where four or five different managers and historic experts all were coming in with their own interpretations of what should be done. “We had to get out of the way so that the lead master craftsman on the site could talk with the lead historian on the project.”

Understanding and appreciating the unique roles that every team member plays in a historic renovation project helps the project run smoothly. “As in any endeavor, it gets down to the chemistry between people and the respect for other professionals,” says Sydness. When those ingredients are present, the historic restoration becomes a “harmonious collaboration”—and a successful one. ◆

Mary Lou Jay is a freelance writer based in Timonium, Md.

UNDERSTANDING AND APPRECIATING THE UNIQUE ROLES THAT EVERY TEAM MEMBER PLAYS IN A HISTORIC RENOVATION PROJECT HELPS THE PROJECT RUN SMOOTHLY.



Resources

Old World Stone, Ltd.

- oldworldstone.com

Harold Vogel

- hcvog@aol.com

Dry Stone Conservancy

- drystone.org

Sydness Architects

- sydnessarchitects.com

F. The **Washington National Cathedral**, built mainly of Indiana limestone, has been under construction for 83 years and represents the work of thousands of masons, sculptors, and other workers. *Photo courtesy of Joseph Alonso*



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BRINGING A SENSE OF HISTORY TO
BUILDINGS OLD AND NEW

BY MARY LOU JAY

THE RESTORATION OF AN HISTORIC STONE BUILDING, OR THE DESIGN AND construction of a new structure to blend with an existing historical one, requires patience, special skills and the cooperative efforts of the entire building team. These projects demonstrate how it can be done well.

Reynolds Center/Kogod Courtyard

Lorton Stone, LLC, of Springfield, Va., worked on many stone restoration projects at the old U.S. Patent Office, now the Donald W. Reynolds Center for American Art and Portraiture. Company President Manuel Seara says the key to such work is documentation: a written record of each stone's condition, photographs, a piece mark for every stone and a location map that shows where each piece goes. The architect and stone mason use this information to determine which stones must be replaced and which can be repaired and reused.

Lorton salvaged the marble floors at the Reynolds Center, a technically challenging undertaking. To minimize pressure that could cause damage to a stone's perimeter during removal, the stone masons sawed through joints and removed caulk before prying it out. "You have to isolate the setting bed from piece to piece," Seara explains.

They set the same white Vermont marble used in the Reynold Center's north lobby in planters for the building's new Robert and Arlene Kogod Courtyard. Cold Spring Granite cut, matched and arranged the stone veneer pieces to make the planters appear as a heavy, solid mass of marble.

The floor of the new courtyard, paved in two shades of black granite, contrasts with the gray granite and brown sandstone façades of the existing structure. "It gives them a bigger presence and helps them pop visually," says Landscape Architect Rodrigo Abela, RLA, of Gustafson Gurthrie Nichol Ltd. A long band of stone on this floor forms a shallow, 1/4-inch-deep water feature that reflects the façades and the spectacular steel, aluminum and glass expanse overhead.

Debra Nauta-Rodriguez, AIA, project executive with the Smithsonian's Office of Planning and Project Management, says Lorton did an exceptional job on this building. "The whole quality control in stone installation is to make sure there are no tripping hazards and that everything is level, especially around the water feature. Getting all of those

A. The stunning new floor of the **Robert and Arlene Kogod Courtyard** features two shades of black granite and contrasts with the gray granite and brown sandstone façades of the existing building. *Photo courtesy of the Smithsonian Institution*



“IF THE STONE DIDN’T WORK, THE BUILDING WOULDN’T WORK.”

B. The quarry that supplied the original granite for **St. Albans School’s Marriott Hall** was no longer open, so alternative stone with slightly different characteristics and color was brought in to match the historic structure as closely as possible. *Photo courtesy of Espina Stone*

transition points where the metal edge meets stone edge and where the flat surface meets a slightly sloped surface was really a challenge.”

St. Albans’ Marriott Hall

St. Albans School is an all-boys school located on the grounds of the Washington National Cathedral in Washington, D.C. The campus includes the original Lane-Johnston building, constructed with stone in 1905, and several other brick and precast structures added over the last century.

When the school needed a new building, project architects Skidmore, Owings and Merrill (SOM) of New York designed Marriott Hall as a glass and stone structure that incorporated much of the century-old Lane-Johnston building. The choice of stone was critical. “We wanted to find a stone that was similar not only in stone type but in the scale of the building,” says SOM’s Roger Duffy, FAIA. “We were trying to make the campus more cohesive.”

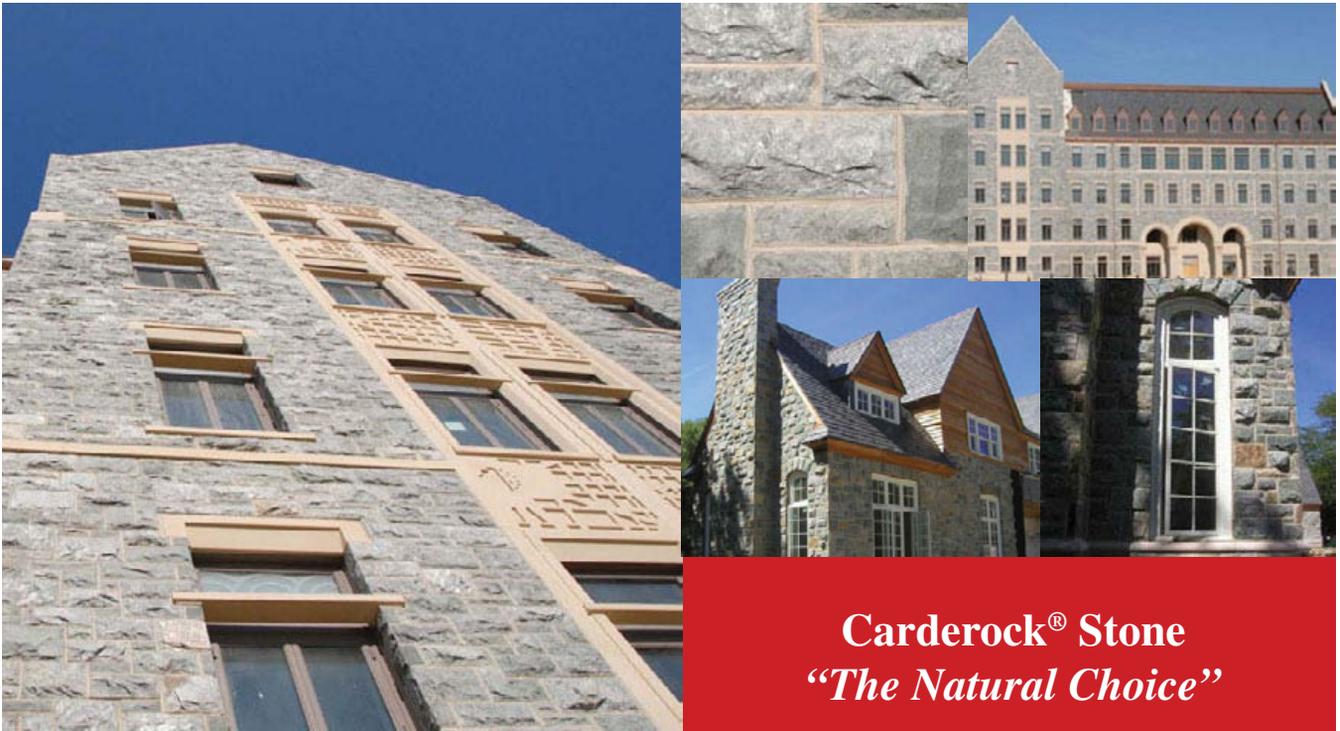
The building design, including choice of stone, had to pass through several internal and public approval regulatory agencies. Internally, the St. Albans

School Governing Board and the Protestant Episcopal Cathedral Foundation (PECF) had to approve the plans, and externally, the Historic Preservation Review Board (HPRB) and the Advisory Neighborhood Commission (ANC) approved the building plans before construction could begin in earnest.

“Each group had its own agenda, with fairly unique and subject criteria; it was challenging,” Duffy notes.

One of the first hurdles was finding the right stone. The “bluestone” in the original building actually is granite, according to Brigitte Perry of Penn Direct Stone, Inc. Since the quarry that supplied the original stone was closed, Perry helped Espina Stone locate a good alternative at Adirondack Natural Stone in New York state.

“The granite there had slightly different characteristics and color, but after several samples, we were able to get a combination of that material that matched the old building as closely as possible,” says Bob Picardi of Espina Stone. The stone fabricators adapted their splitting techniques, and Espina employees worked the stone onsite to produce the



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C. At McGivney Hall, the color matching and workmanship on the replacement limestone were so flawless that it's difficult to tell the difference between old stonework and new. *Photo courtesy of The Catholic University of America*

look of the rougher, less rectangular stone in the original structure.

"The mortar on the project was a big contributor to the color scheme," Picardi continues. "You had to have mortar color and stone in combination to get the right end result." Espina made multiple mockups of the walls before the school and the architect were satisfied.

The Lane-Johnston building features smaller, browner stones above the wainscoting and



heavier stones of dark gray beneath. The architect initially planned to build the stone of Marriott Hall's exterior entirely in the upper section's style, but the removal of a hill that revealed more of the older building inspired a design change. "We adopted a similar strategy in Marriott Hall of heavier, darker stones against the earth and then, as the building emerges vertically to the sky, lighter gray stones with some warm mixed in," says Duffy.

The success of this project is a tribute to the teamwork among the contractors, the stone supplier, the installer, and the school, says Picardi. "The architect was very set on matching the building and was very demanding, but he was also very open to looking at possibilities that would get the results they were looking for."

The reviews of the soon-to-be opened Marriott Hall have been favorable. "If the stone didn't work, the building wouldn't work," says Duffy.

McGivney Hall at the Catholic University of America

For the exterior restoration of the 1950s-era McGivney Hall at the Catholic University of America, project manager Hess Construction Company salvaged as much demolished stone as possible, cleaned the existing stone and then found an appropriate match for necessary replacements with the Alabama Silver Shadow limestone supplied by Vetter Stone's Alabama Stone Company.

Getting a good match can be difficult, says Mary Dillon, the company's sales represen-

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tative. "Stone can change color, texture and veining properties depending on where in the quarry it's being taken. There also are significant changes in the color of the existing stone on the buildings due to weathering. The challenge is to find a stone with enough of the same properties as the original stone so that it will not only match well, but that it will age the same as the existing stone."

Stone removal and reinstallation at McGivney Hall required patience, says Mike Dayberry of Old World Stone Masonry, who did some of the stone installation at McGivney Hall. "You have to work the stones out slowly, so you can make sure that the structures above them don't collapse or move."

"This type of work can't be done by just anybody; we have been training people to do this work for a long time," adds Oscar Amurrio of 8 Brothers Masonry, whose work at McGivney Hall included exterior stair restoration and a new stone building sign.

In the end, the color match and workmanship were so good that the replacement stones were "transparent" according to Michelle Honey, FAIA, Hess' vice president for development of educational and institutional services.

Getting that transparency is the goal of every historic stone restoration project. A successful job will bring back the structure as closely as possible to the way it looked in the past, when the stone on it—and everything else—was new. ◆

Mary Lou Jay is a freelance writer based in Timonium, Md.

D&E. During the restoration of **McGivney Hall** at the Catholic University of America, demolished stone was salvaged and the existing stone was cleaned for a result that was a perfect match between old and new. *Photos courtesy of 8 Brothers Masonry*

Resources

St. Albans' Marriott Hall

Skidmore, Owings and Merrill • som.com
 Penn Direct Stone, Inc. • penndirectstone.com
 Espina Stone • espinastone.com
 Adirondack Natural Stone
 • adirondacknaturalstone.com

Reynolds Center/Kogod Courtyard

Gustafson Guthrie Nichol Ltd. • ggnltd.com
 SmithGroup • smithgroup.com
 Foster + Partners • fosterandpartners.com
 Lorton Stone, LLC • lortonstone.com
 Bovis Lend Lease • bovislendlease.com
 Cold Spring Granite Company
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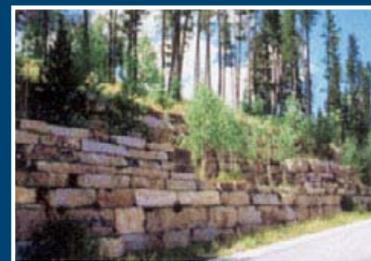
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 8 Brothers Masonry • 8brothers@verizon.net
 Hess Construction Company
 • hessconstruction.com
 Alabama Stone Company/Vetter Stone
 • vetterstone.com

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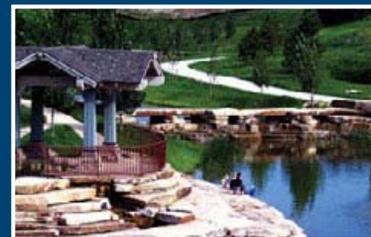


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A



B

A&B. Keith Phillips carefully and precisely carved replacement Corinthian capitals to match the existing stone at the top of the dome of the Olympia Capitol building.

AS LONG AS THE COMMITMENT TO PRESERVING HISTORIC American structures is strong, the demand for the special skills of the stone cutter and stone carver will remain solid. And even while some projects have been put on hold for now due to the economic downturn, the commitment to preserve and restore our great old buildings has never been stronger, especially in the governmental realm.

“The government is more interested in preserving than ever,” says Mike Field, president of Pioneer Masonry Restoration Company in Seattle, “certainly in Washington state. Any government agency I’ve dealt with in recent years seems to know that they have guidelines they need to follow in restoration, and the expectation that things be done right.”

Plus, adds Field, “They’re engaging architects who have a lot more sensitivity. Thirty years ago, few architects knew anything about restoration. Now a number of them specialize in it.”

Earthquake aftermath

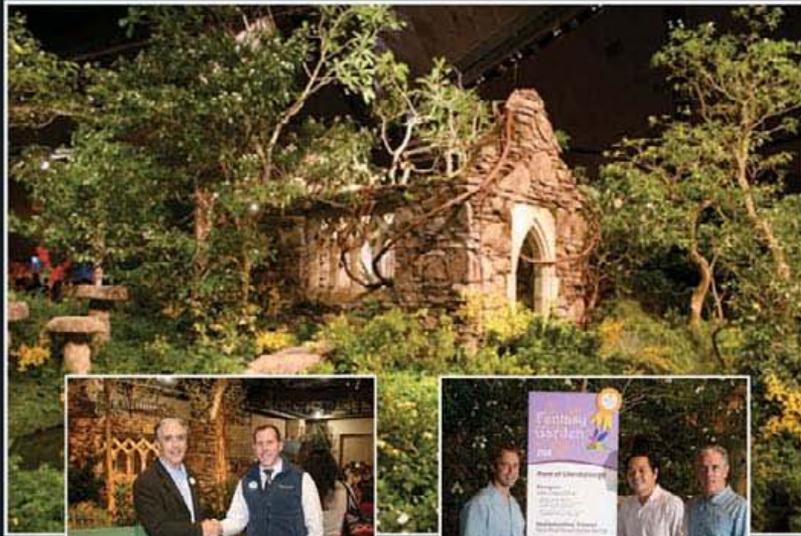
One of the most ambitious projects in Washington state in recent years was the restoration of the collection of state capitol buildings on the capitol campus in Olympia. A particular challenge was the restoration of the magnificent sandstone legislative building, famous for its towering masonry dome, the tallest in the United States.

The legislative building has been a work in progress for the last half-century. Damaged by three major earthquakes, the



C. In 2001, the **legislative building** in Olympia, Wash., was devastated by an earthquake that launched its dome straight up into the air, undermining the integrity of the structure and damaging the ornate Corinthian capitals.

From Artisans...



Pictured: John Collen and Sean Flynn

Pictured: John Collen and Associates

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Bringing home the "Gold" in 2008 from the Singapore Garden Festival with his display, 'Rose of Glendalough'. The exhibits architect John Collen from Celtic Garden Imports describes the premise of the design as follows:

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This exhibit also set show records at the Philadelphia Flower Show in 2008 by winning Best in Show and daily the Peoples Choice Award.

...To Architects

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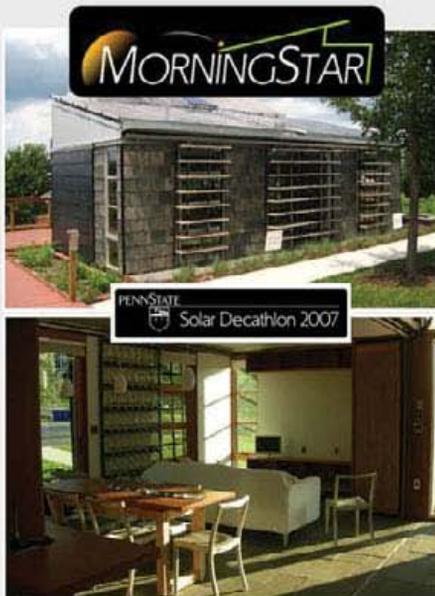
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—*Louis Alessi, Project Executive.*



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building has spent an inordinate amount of time shrouded in scaffolding.

Indeed, the building, which originally was completed in 1928, was about to undergo extensive remodeling in 2001 when it was devastated — the day after the contract for the job was signed — by the 6.8-magnitude Nisqually earthquake.

“The scope of the job changed suddenly,” says Field, whose company was called to do emergency repairs and to install upgrades that would limit the damage the next earthquake might cause.

The impact of the quake shot the dome, which sits atop massive colonnades, straight up into the air. Miraculously, it fell back onto

the supporting colonnades, but not without undermining the integrity of the structure and damaging the ornate, intricately carved Corinthian capitals.

Removing and replacing broken parts of the capitals near the top of the 287-foot dome, some as big as a refrigerator, recalls Field, “was part of the job we sweated most. How are you going to lift a multi-hundred-pound piece of stone 250 feet in the air and then squeeze it into a spot that was no bigger than the stone itself?”

Pioneer Masonry Restoration Company brought in a moving company — the kind that moves steel mills and the space shuttles. “We put scaffolding around the whole drum of the dome,” says Field, “craned up the stone, had the stone on a platform and squeezed it into place with little mini jacks.”

Of course, well before the installation, the replacement pieces had to be carved precisely to match the existing stone, a job for a master architectural carver.

Corinthian carving in Olympia

A stone cutter for 25 years, Keith Phillips has a cutting shed at the Marenakos Sandstone Quarry in Tenino, Wash. While he had had extensive experience in sculpting stone on historic buildings, including Olympia’s Temple of Justice, the legislative building presented a unique challenge.

“I’d never carved a Corinthian capital before,” recalls Phillips. “The challenge was to make it very much like the image of the originals. I took hundreds of measurements and then had a major revelation: it was very symmetrical and geometrical. Once I discovered that, it was off to the races because I could measure everything very accurately.”

Pioneer Masonry Restoration Company obtained stone “blanks,” cubed, cream-colored sandstone pieces, to match the original stone. The blanks were purchased from the Wilkeson Sandstone Quarry some 90 miles from the capitol building site, which

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were delivered to Phillips' shed in Tenino for carving.

"I do everything by hand," says Phillips, "using diamond blades. A stone cutter has to have a good eye for ratio and proportion, know how to work with sharp tools and how to carve projections without breaking them off. If you're working on a projection, you go in toward the projection—you don't carve out toward the point. Otherwise, you break it off."

After carving the replicas, says Phillips, "one daunting task was to cut them in half using a core drill. They had to go around metal posts like an Oreo cookie. The core drill allowed me to put the blanks on a spindle and turn them."

In the end, recalls Phillips, "I was totally thrilled. They came out perfect."

The three-year, \$120 million rehabilitation project, completed in 2004, restored the legislative building to its original resplendent glory,

with the added benefits of modern heating and cooling, plumbing, fire protection, wireless technology systems and state-of-the-art seismic and security systems.

Executive decision

Alterations to the building with the most famous address in the world—1600 Pennsylvania Ave.—are among the most meticulous and carefully scrutinized in the country, overseen by historians, curators and architects employed by the National Park Service.

The extensive repairs to the stonework on the exterior of the White House in the early 1990s were put in the hands of the renowned architectural carver Patrick Plunkett.

Plunkett is highly regarded for the originality of his stone creations as much as for his restoration expertise, both of which are on display in his celebrated work on the Washington National Cathedral, for which he was hired as carver in 1975. The White House restoration

D. The extensive repairs to the stonework on the exterior of the **White House** in the early 1990s were some of the most meticulous and carefully scrutinized in the country.



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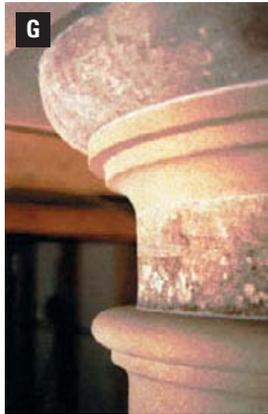


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E-H. During the 1990s, extensive repairs were made to the White House's exterior, especially the badly cracked southwest corner.



was, by contrast, an exercise in discipline. "We had to keep to strict design requirements," he says. "Under no circumstances must you change anything."

Plunkett worked part-time doing repairs on the White House from 1986 until 1991, when, he says, "I was technically classified as the master carver of restoration for the executive residence of the president," and put in charge of a major restoration of the stonework.

"After the scaffold was put up on the building and all the paint was removed," recalls Plunkett, "my job was to walk through and assess all the stones that needed to be replaced or repaired, make patterns for those stones and a sawing list, and then go to the place where all the stone was stored and pick suitable blocks."

The stone, an Aquia Creek sandstone, had been stored in a National Park facility

since the 1950s, when it was removed from the U.S. Capitol Building, which was resurfaced in marble at the time.

After finding the correct stone, Plunkett recalls, "I put them on the saw, took one small cut on the outside so I could see the fresh stone on the inside and if it was good, continued cutting to the measurements I had. If there were imperfections in the stone, like cracks, clay nodules or slits, the stone was put back in the stack again and I'd pick up another one."

Even more challenging was the repair of the southwest corner of the White House. "There were some nasty cracks running down through that corner, which took flashing off the cornice," says Plunkett. Exploring deep underneath the modillion stones, the decorated projection of masonry that sticks out above the building, he found two large

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iron bolts. “When we took the nuts off the bolts, a [half-ton] modillion stone dropped onto the supporting scaffold,” he recalls.

The next challenge, he says, was finding stones big enough and of the right color, consistency and texture to go back in again. It needed to be a fine, not coarse, grain stone.

Once the right stones were chosen, they were carved to match the elaborately deco-

rated originals and then hoisted up with a massive crane—no small feat, as the pathway between the road and the corner of the building was thick with trees. Then they were slid onto 1-inch stainless steel rods set into the structure of the building and pressure-graded into place.

The only “modern” equipment used on the job were cranes and a 48-inch circular diamond saw imported from the U.K. “A stone cutter generally works with a square, a straight edge and a whole bunch of measurements,” explains Plunkett.

Each corner of the White House project took about a year.

Plunkett says the White House project was gratifying in myriad, sometimes surprising ways. “It’s very satisfying working on an historic structure when you know no one’s ever done it before.”

This project turned up a particularly intriguing artifact. “When we took stone out of the southwest corner, there was a distinctive smell of smoke,” he recalls—a remnant of the War of 1812, when the British tried to burn the White House to the ground. “I took some of the old stones down to the curator’s office so they could see it and smell it.”

“It was rather ironic, I thought,” says Plunkett, who was born and raised in England. “My forefathers went out of their way to destroy the building, and now I’m going out of my way to make it right.”

Steven Cutler is a freelance writer based in New York, N.Y.

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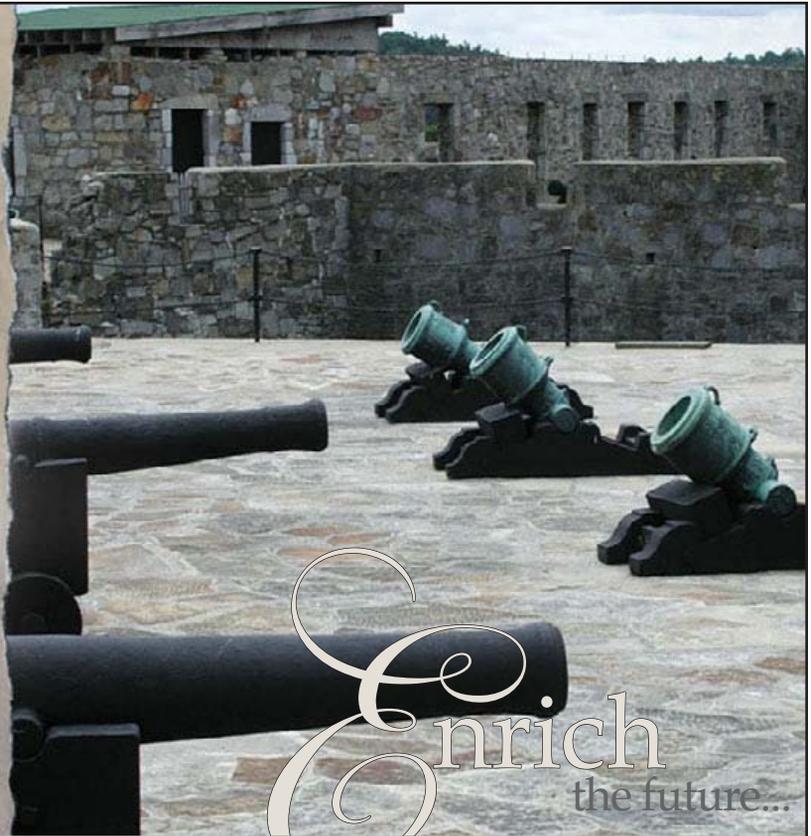
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the Renaissance of slate

BY DAVID B. WILLIAMS

IN THE PAST FEW DECADES, SLATE HAS UNDERGONE A RENAISSANCE. WHERE ONCE IT WAS USED primarily for its practicality—no stone better forms thin, smooth sheets—slate now has become known for its elegance, primarily in roofing, where it graces famous buildings such as the Smithsonian Institution Castle in Washington, D.C., and the Biltmore Estate in Asheville, N.C.

During the years of its peak production in the early 1900s, slate was the plastic of its day. A person could wash clothes in a slate laundry tub, chop food on a slate countertop and store leftovers on a slate refrigerator shelf. Going to work, one could walk down a slate sidewalk, trip over a slate curb and hitch a horse to a slate hitching post. At work, slate was used in industries as diverse as printing, leather tanning and brewing. And if one stopped to play a round of pool at the local tavern, the balls rolled across felt stretched over a perfectly smooth and level slab of slate.

Most readers of this magazine probably had their first encounter with slate at elementary school. The blackboard grew out of the use of school slates, handheld tablets written on with chalk or slate pencils. Cadets at West Point were the first students in America taught from a slate blackboard. On September 21, 1801, George Baron, an immigrant from England, wrote on an upright slate blackboard with a piece of chalk. No one knows, however, who was the first person to run their nails down a blackboard or the first to have to stay after class and repeatedly write “I will not...” for some wrongdoing. Nearly all blackboard slate came from Pennsylvania.

One of the earliest uses for slate in America was for tombstones. The stone cut well, split evenly into smooth sheets and resisted weathering. Slate gravestones came from Slate Island in Boston Harbor as early as 1630 and quickly became the preferred marker of death for the Puritans. Most gravestones resembled a head board with three lobes—two smaller ones surrounded the large middle lobe.

But of all the ways that people worked with slate, by far the most common was for roofing, where slate excels because it looks elegant, lasts for decades and resists fire and mildew. Used at least since the time of the Romans, slate roofs did not become widespread in America until the 1840s, when Welsh miners migrated to areas along the eastern seaboard. The men, many who had worked in the massive Welsh slate quarries, knew the best methods to quarry the unusual stone.

A. The Biltmore Estate was constructed between 1888 and 1895, a time when slate roofs were common in America and known for their beauty, durability and resistance to fire and mildew. *Photo courtesy of the Biltmore Estate*

B. Beneath its well-designed slate roof, **The Smithsonian Institution Building**, which is commonly called the Castle, today is home to the Institution's administrative offices and the Smithsonian Information Center. *Photo courtesy of the Smithsonian Institution*



All slate on the East Coast began as fine-grained sediments that washed deep into an ocean off of North America between 540 and 420 million years ago. The various colors of slate result from the amount of oxygen in the water. When little oxygen reached the deep sediments, organic matter accumulated and the carbon turned the sediments black. As conditions changed, oxygen mixed into the water and lightly oxidized the iron in the sediments, turning them green and purple. And for one brief period of time, a very high level of oxygen permeated a small area of sediments turning them brick red, now quarried as the famous red slates found only along the New York-Vermont border. (Iron also can weather and change color, creating the slates described as “fading” or “weathering.”)

Eventually, however, the ocean began to close as a series of island arcs collided with the eastern edge of North America. As the arcs pushed into and piled atop the sediments, the beds began to fold, compress and lose water. In addition, the temperature rose and slowly the sediments metamorphosed into slate. Metamorphism generated a hard, dense rock with low porosity, three attributes that have made slate popular for centuries.

Squeezing also realigned the flat minerals such as mica within the beds. Where once they occurred at angles, now the micas began to rotate and align, creating a rock with an internal structure akin to a deck of cards. Geologists refer to this alignment of minerals as slaty cleavage. It is what gives slate its unusual properties. Because cleavage creates planes of weakness between aligned minerals, slate can be split into virtually any thickness.

Folding, however, did lead to a problem. The folded beds often ran vertically and dove deeply into the ground, which required the narrow, vertical holes that characterize slate quarrying. To reach the rock, the Welsh introduced a hoist and trolley system that would allow deeper penetration than the prevailing dredge and crane. The deepest known quarry plunged 900 feet into the ground at Pen Argyl, Pa.

The slate roofing industry grew throughout the late 1800s and peaked at about 1.2 million squares just prior to World War I. One square equals 100 square feet. Pennsylvania generally produced twice

as much slate as the next most productive state, Vermont. Slate sold well because it was abundant, non-flammable, durable and fashionable, but it couldn't compete with asphalt shingles. By 1947, asphalt roofing out-sold slate 437 to 1.

At present, production has reversed with Vermont the dominant market, particularly for roofing, followed by Pennsylvania. Another change reflects the influence of foreign materials, with most flooring slates now arriving from India, Brazil and China.

Although slate achieved its early fame because of its versatility, its ability to resist weathering and to retain its beauty has given it a mantle of greater respectability. Few stones have as long a history, and few stones have as great of reputation. ♦

David B. Williams is the author of Stories in Stone: Travels Through Urban Geology, from which this article is adapted. Visit www.storiesinstone.info.

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Maymont dens

NATURAL STONE
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BY JON PASIERB

Photo by Pattie Anderson

RICHMOND, VA., OFTEN IS RECOGNIZED for its rich history and tradition. It's a place where people can walk in the footpaths of famous generals, debutantes and national heroes. But visitors and residents of the city also know there's a place where this uniquely American history comes together with the natural and architectural beauty of Southern Europe and the Far East.

Maymont was originally the country estate of wealthy industrialist James Dooley. It was completed in 1893 and bequeathed to the city of Richmond in 1925 upon the deaths of Dooley and his wife. After the city took over its operation, the 100-acre property, overlooking the James River and located near the city's geographic center, became a public park and eventually a national historical landmark.

Perhaps the most outstanding features in the park are the two internationally themed gardens, which seemingly have the effect of at once transporting visitors back through time and away to other parts of the world. The Italian Garden features exquisite statues, fountains and gazebos that bring to life the classic Italian style of the 15th and 16th centuries. Meanwhile, the Japanese Garden contrasts the austere formality of the Italian Garden with a more ancient, natural feel. The garden design was based on ideas from 7th century China, and now incorporates elements from classical gardens found in Tokyo and Kyoto, Japan.

The use of stone in the architecture and design of each of these gardens is unmistakably important to the charm, beauty and lon-

gevity they possess. Visitors walk through the formal entrance to the Italian Garden through a stone arch and find themselves in a world of masterful stonework. Near one of the garden's entrances is the pergola, a structure consisting of parallel rusticated granite colonnades. Intricately carved granite planter boxes line the perimeter of the main garden and both the Cascade and Fountain Court were marvelously crafted from Petersburg granite.

THE USE OF STONE IN THE ARCHITECTURE AND DESIGN OF EACH OF THESE GARDENS IS UNMISTAKABLY IMPORTANT TO THE CHARM, BEAUTY AND LONGEVITY THEY POSSESS.

The Japanese Garden was built on a south slope on the estate and the location immediately offered numerous natural granite outcrops. Some of the original stonework such as that around the base of the waterfall remains in place, but given that the garden had deteriorated badly over the years, Earth Design Associates was hired to do a major renovation in 1978.

Architects from Earth Design worked to build upon and improve the theme established by the use of natural stone in the Japanese Garden's original design. The garden was expanded and given a makeover and is now the largest of its kind on the East Coast. Constrained by a small budget, the architects had to be very creative with the materials they worked with and in many cases made use of stone available on site or found throughout

the city. A cobble beach was made using thousands of natural stones, and a simple but striking bridge that stretches over the garden's Koi pond was constructed out of large granite slabs. Earth Design was able to preserve and revitalize the natural, ancient feel of the garden—characteristics that have for many years given it a peaceful, meditative quality. The project received acclaim as a Tucker Design Award winner in 1984.

The Maymont Foundation, a group of private citizens dedicated to the restoration and preservation of the park and its gardens, took over its operations in the 1970s with the express goal of keeping its beauty and history alive for many future generations to enjoy. More than a century after its original construction, this goal thus far has been achieved. Thanks in part to the strength, permanence and natural allure of the stone found throughout its gardens, Maymont will remain a priceless jewel in Richmond. ♦

Jon Pasierb is a writer and editor with Naylor, LLC.

Resources

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A love of the profession

BOBBY WATT IS COMMITTED TO RESTORATION DONE RIGHT
BY KATIE EVANS



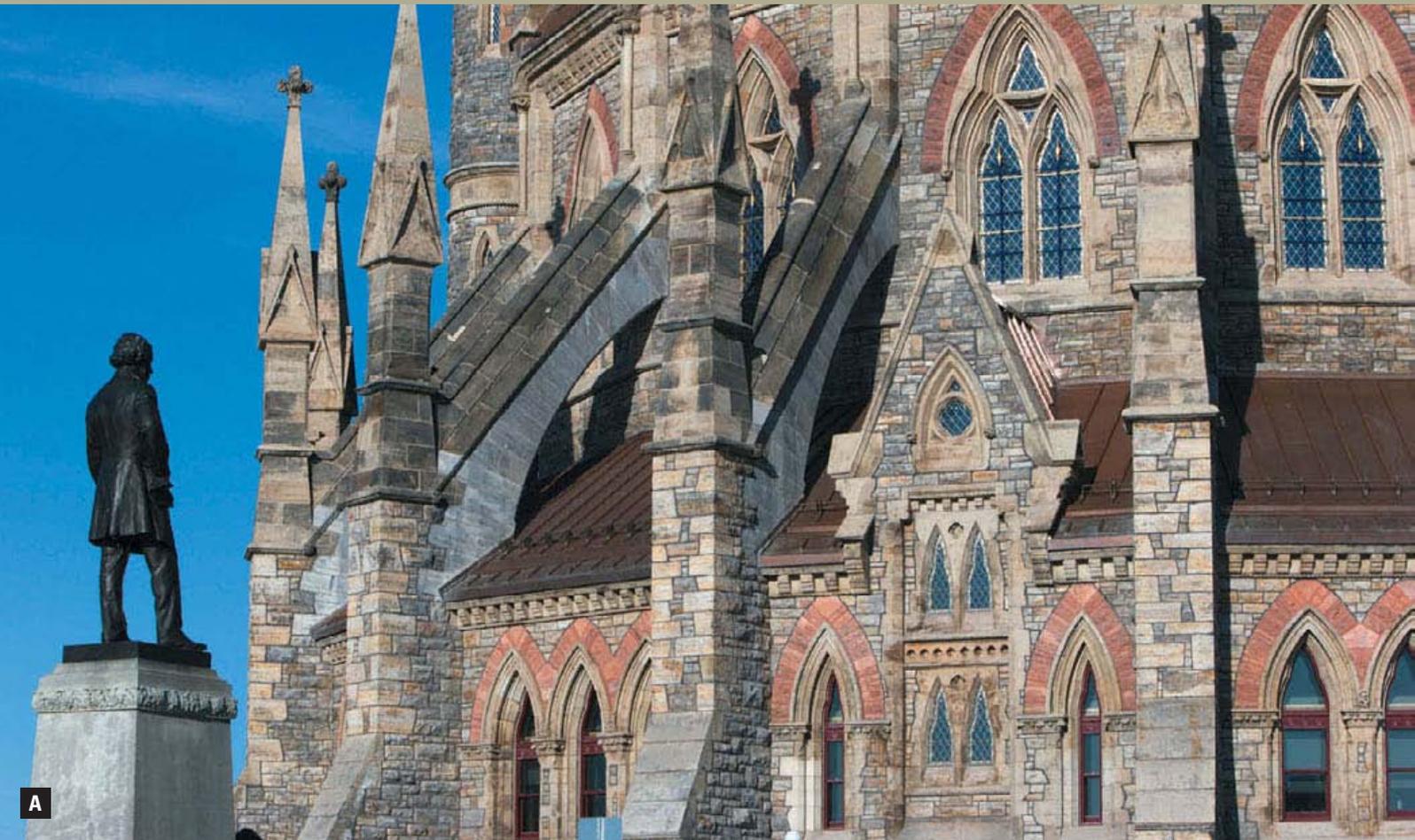
ROBERT “BOBBY” WATT ALWAYS KNEW A TRADE CAREER WAS FOR HIM. At 16, fresh out of school, Watt started a masonry apprenticeship in his home country of Scotland, working with two great Scottish masons, one of them being renowned artisan John Thomson.

“I was lucky enough to benefit from all of that knowledge,” Watt says.

Right away, Watt began working as a historic restoration mason and felt an instant connection to the work.

“I loved it from day one; it was just amazing,” Watt says. “I always had a love of old buildings and architecture.”

Watt got to spend half of his apprenticeship working on restoration of Brodick Castle, located on the Isle of Arran in Scotland. The castle originally took centuries to build, with work being done from the 1200s through the 1600s.



A

WATT WAS TAUGHT THAT “THE ATTITUDE TOWARD RESTORATION IS THAT IT HAS TO BE REALLY NURTURED,” HE SAYS. AND THAT’S AN IDEAL HE HOLDS TO THIS DAY.

“I was pretty lucky,” Watt says. “The age of it, over 600 years old; it doesn’t get much more authentic than that.”

Watt was taught that “the attitude toward restoration is that it has to be really nurtured,” he says. And that’s an ideal he holds to this day. And, as he nurtured his own love for restoration masonry through the years, Watt founded RJW Stonemasons in Ontario, Canada, and still gives every project the love and attention it deserves.

A proud profession

Through RJW Stonemasons, which was founded in 1987, Watt has worked on some extraordinary projects throughout North America and the Caribbean, including the Library of Parliament in Ottawa and the Washington Monument in Washington, D.C.

Watt understands the importance of his work every time he undertakes a new project. “It’s an enormous feeling of pride and of belonging,” Watt says. “I really feel as if there is a time to come where people will look at these buildings and say ‘I’m really glad that these guys came along and looked after this.’”

One of the more memorable projects Watt has worked on was the restoration of the City Hall Park Fountain to be placed back in City Hall Park in New York City. The fountain, originally placed in the park in 1871, was designed by Jacob Wrey Mould, who co-designed Bethesda Fountain in Central Park.

“He decided to give a fountain to the city of New York,” Watt says. “He wanted it in front of city hall.”

The fountain was removed from City Hall Park in 1920 and relocated to Crotona Park in the Bronx to make room for another fountain. The Mould fountain remained in the Bronx for more than 70 years being abused in what Watt describes as a “horror story.”

“It had been shot at; there were needles in it,” Watt says, remembering what the fountain looked like when he first saw it, adding that there were 70 coats of paint on it. Not to mention, the entire center column was missing. The eventual restoration of the Mould fountain was part of a \$34.6 million project to restore City Hall Park.

In November 1998, Watt and his crew took the fountain to Canada to begin restoring it — no easy task, since the base of the fountain was 40 feet by 40 feet. “We transported it back to Canada on 12 tractor trailers,” Watt remembers.

They restored the base and the main pool and had to carve a new central column. The project took nearly a year to finish, with Watt’s crew completing it in October 1999. The unveiling of the restored fountain and renovated City Hall Park took place Oct. 7, 1999. Watt says it was unbelievable to see the fountain back where it belonged.

“It was just wonderful to be a part of that history,” Watt says. “Here was the fountain coming back to City Hall Park after all these years apart, and we were a part of it.”

An unappreciated art

And while Watt is still committed to nurturing every project, unfortunately he sometimes feels like his is the only company with that attitude. “They (other companies) don’t take any care to make sure that the new matches the old,” Watt says.

Watt says he has seen incorrect materials and techniques used that would leave the finished project in such a condition where it would have to be repaired only a few years later.

He says there is a “complete lack of knowledge” and a “disconnect” in the industry, explaining that a lot of people who attempt stone restoration “do more damage than good. That really bugs me,” he says. “I have always had that sort of thought



A. Bobby Watt approaches each of his projects with pride and respect for the original materials. His level of commitment definitely is evident in this renovation of the **Library of Parliament** in Ottawa, Canada.

B. Before restoration, the **City Hall Park Fountain** had been vandalized and covered with more than 70 coats of paint. The restored fountain now is part of the beautiful, renovated City Hall Park in New York City. *Photo courtesy of Conservation Solutions*

A Glimpse at the work of RJW Stonemasons

RJW Stonemasons has won awards for its restoration and addition work to places such as the Croatian Embassy and the Pooleys Bridge in Lebreton Flats, Ottawa, Canada. Bobby Watt's work has taken him all around North America and the Caribbean, and he says every project he's worked on is memorable.

Some of those projects have included the following:

- Restoration of Queens Park in Toronto, Canada.
- Consultant work for the restoration of La Fortaleza, Guanica Lighthouse, the capitol building and Church of San José in San Juan, Puerto Rico.
- Restoration of the fountain, and the addition of a reflecting pool, at Madison Square Park in New York City.
- At Malabar State Park in Ohio, Watt's team demolished, and then rebuilt, the 130-year-old stone barn foundation.
- RJW Stonemasons restored the sea walls at the Immigrant Docks at Hudson River Park in New York City.
- Another award-winning project, Watt and his team did structural reconstruction and restoration of the Mappin Wing of the Governor's General Residence in Ottawa, Canada.

process engrained in me right from when I was a teenager (to complete a project properly)."

And he says it is important to him to make sure that every one of his employees views restoration masonry the same way he does.

"It's taken me a long time to build up the size of the crew we've got," Watt says, adding that the company has about 40-45 employees. "We get some incredible people coming to work for us."

Watt is committed to the industry that took him in at age 16, and appreciates what it allows him to do and is happy he's been able to surround himself with employees of equal passion.

"This whole idea of not just throwing the wall up to get away as fast as you can," Watt explained. "I try and have our guys understand that they're not restoring for themselves as much as they are restoring for the future, for the people that come."

For more information about RJW Stonemasons, visit www.rjwstonemasons.com. ♦

Katie Evans is an award-winning newspaper journalist who now works as a freelance writer. She received her B.S. in Journalism from the University of Florida.



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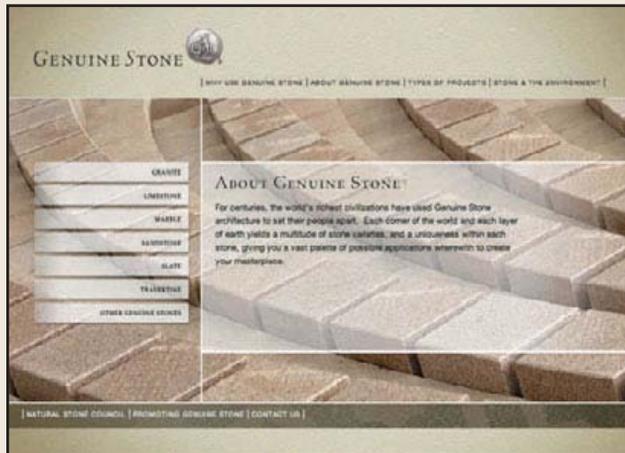


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GENUINESTONE.ORG OFFERS A WEALTH OF INFORMATION ON STONE AND THE ENVIRONMENT

THE NATURAL STONE COUNCIL (NSC), A COLLABORATIVE ORGANIZATION representing business and trade associations serving the natural stone industry, now has an ever-growing repository of natural stone information available on its Web site, www.GenuineStone.org.

“The NSC is building an impressive library of knowledge, research and information, particularly with regard to the hot topic of sustainability, that we would like to share with the industry,” says John Mattke, chairman of the NSC’s Sustainability Committee.

As an example, based on two years of research and assessment in partnership with the University of Tennessee’s Center for Clean Products and Clean Technologies (CCPCT), the NSC is able to share a variety of best practices, case studies and material fact sheets on the site.

Best practices

- Water Consumption, Treatment and Reuse
- Site Maintenance and Quarry Closure
- Solid Waste Management
- Transportation (expected June 2009)

Case studies

- Application of Green Building Certification Programs to Natural Stone
- Durability of Stone Flooring in High Traffic Areas
- The Use of Reclaimed Stone in Building Construction
- Solar Reflectance of Natural Stone (expected June 2009)

Material fact sheets

The one-page (double-sided) documents summarize regions of deposits worldwide, physical properties, applicable ASTM standards, as well as environmental data and human health considerations.

- Granite
- Limestone
- Marble
- Sandstone

Additionally, visitors to the site will find information on green building standards, residential and commercial projects using stone and general information about natural stone and its benefits. Access to the Web site is free and does not require a log in or password. ♦

Calendar of events

MARK YOUR CALENDARS AND MAKE PLANS TO ATTEND THESE EXCITING UPCOMING EVENTS

BUILDING STONE INSTITUTE EVENTS

Fall Study Tour

Sept. 13-16
Kansas City, Mo.

2010 Annual Convention

Feb. 28-March 3
Austin, Texas

2010 Tucker Design Awards

May 14
New Haven, Conn.

INDUSTRY EVENTS

American Society of Landscape Architects Annual Meeting and Expo

Sept. 18-31
Chicago

Stone Expo 2009

Oct. 22-24
Las Vegas

Greenbuild International Conference and Expo

Nov. 10-13
Phoenix, Ariz.



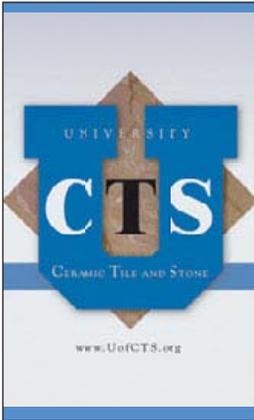
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the use of reclaimed stone in building construction

EDITOR'S NOTE: This article was excerpted with permission from the University of Tennessee Center for Clean Products. To read the case study in its entirety, visit www.genuine-stone.com/env_researchandresults.php



Marble from the original altar and sandstone from a landscape retaining wall were used to create cladding and columns for the new baptismal font and altar at St. Anne's Cathedral in Great Falls, Mont. *Stone restoration and photographs by Malisani Inc.*

BUILDING CONSTRUCTION, DEMOLITION AND RENOVATION ACTIVITIES PRODUCE NEARLY 160 MILLION TONS OF WASTE EVERY YEAR—ALMOST 1/3 OF THE UNITED STATES' NON-HAZARDOUS SOLID WASTE.¹ Coupling this with quickly diminishing landfill space in the country and rising landfill fees, planned building deconstruction, including material salvage and reuse, now is an increasingly considered strategy in both the architectural and construction communities.

Adaptable to a range of applications, natural stone almost always can be re-used and thus need not contribute to landfill waste. Moreover, extending the life cycle of the product reduces its overall environmental impacts, and using reclaimed stone may even contribute to green-building programs, such as the U.S. Green Building Council's LEED (Leadership in Energy and Environmental Design) certification.

Applications: Salvaged stone lends itself to numerous reuse applications

- Slabs and tiles can become paving material.
- Stone unsuitable for structural or finish material can be used in gabion (rip-rap) retaining walls.
- Smaller pieces can act as gravel fill or aggregate.
- Natural stone's inherent mineral constituents, in powder form, can be used as fertilizer.

- Flat stone fragments make mosaic walkways; bulky cobbles can line flower beds or pathways.
- Pieces of the original structure can be incorporated in new edifice for historic or nostalgic sense.

It should be noted that the strength of salvaged material is a function of employment in previous lives. Subjection to erosion or weathering processes may warrant refinishing.² Performing the appropriate structural tests will indicate the material's potential; consult ASTM standards for (U.S.) examination requirements.³

Deconstruction, salvage and re-use methods

The greatest hindrances to successful material salvage are lack of communication among professionals and the absence of an organized system for the sale of the components and materials. However, if designers weave extra research into the design process, materials can be selected from salvage yards or even existing buildings slated for demolition. See www.boneyardnw.com.

The deconstruction process is more labor- and time-intensive initially, but the long-term cost savings can be significant as landfill fees will be decreased and the deconstructed components can be resold.⁴ Currently, salvaged stone is not con-

sistently less-expensive than virgin stone, especially when the material comes from countries with low labor costs. Often, designers consider imported stone to be the only way to find the color, size and other properties desired for the project goals. If salvaging natural stone is to become a more common practice, designer, clients, contractors and others need to support the market for such stone products.

Benefits

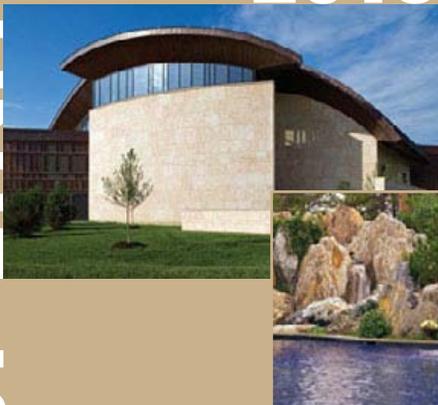
Disassembly and reuse of stone products can prove advantageous on both economic and environmental fronts. LEED program Materials & Resources credits, especially 3, 4 and 5 can be earned for using salvaged material, material with recycled content and material purchased locally, respectively. ◆

References

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- ² Warschield, Th. and J. Braams. 2000. Biodeterioration of Stone: a review. *International Biodeterioration & Biodegradation* 46: 343-368.
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- ⁴ Pun, Sung Kin; C. Liu; C. Langston. 2005. Case study of demolition costs of residential buildings. *The School of Architecture and Building, Deakin University, Geelong, Australia.*

Call for Entries

2010



Sponsored by Building Stone Institute, the Tucker Design Awards program is the stone industry's most prestigious award program. Highly respected by the architecture and design community, the Tucker Design Awards provide an opportunity to honor those projects that have demonstrated design excellence in the use of natural stone.

Who May Enter

Architects, landscape architects, interior designers, and others who feel their work has achieved design excellence in the use and incorporation of natural stone are encouraged to enter the 2010 Tucker Design Awards competition.

Eligibility

Completed projects located anywhere in the world are eligible. Projects in the design stage, under construction, or with unfinished landscaping will not be accepted. A project that has previously received a Tucker Design Award cannot be re-submitted.

Project Types

The Tucker Design Awards are awarded to honor excellence in the concept, design, and construction of projects that utilize natural stone including residential, commercial, and institutional structures; landscapes; interiors; and restoration. Memorials, landscape elements, and fountains are also encouraged.

Submission Procedures

Detailed entry guidelines and a submission binder will be mailed to each entrant upon receipt of the Call to Entry form.

The submission requirements include:

- Up to twelve professional quality 8" x 10" or 8.5" x 11" color photographs of differing views. Images should be carefully selected and identified to include:
 - An overall view of the structure
 - Views of the exterior
 - Views of the interior (if stone is used)
 - Close-up views of the special details

- If the project is a renovation or restoration, at least four of the photographs should be of the project prior to restoration or renovation.

- A written description of the project which should not exceed 500 words and which should include the requirements of the client; a description of how those requirements were met; a description of the project's function; and an explanation of why natural stone was selected.

- For buildings, include a floor plan and section and elevation drawings to illustrate the design and use of stone.

- A site plan. For buildings, the plan should indicate location and use of stone; and for landscape designs, it should indicate areas where stone is used.

- Line drawing showing a typical stone installation detail.

- A separate sheet with the name and location of the project, date of completion, name and address of the design firm and consultants, the project owner, the general contractor or construction manager, the stone fabricator, the stone supplier, the stone installer, and the types of natural stone used.

Please Note: Winners will be required to supply digital high resolution images for publicity purposes. Images of the award-winning projects must be accompanied by a signed release which gives BSI permission to use all copyrighted photos to publicize the awards competition. BSI reserves the right to disqualify any entry with incomplete information or visual elements.

Presentation of the Awards

The 2010 Tucker Design Awards jurors will include: Cesar Pelli, FAIA, Harold Roth, FAIA, and George Hargreaves, FASLA. The award winners will be notified shortly after the jury's decision. Presentation of the awards will take place at the BSI Tucker Design Awards luncheon in New Haven, Connecticut on May 14, 2010. Representatives for the award-winning project must be present to receive the award. For a look at the 2008 Tucker Design Awards, visit BuildingStoneInstitute.org



Entry Form

Registration

1. Complete this Entry Form and submit with the appropriate fee. Registration fees are \$100.00 for the first entry and \$75.00 for each additional entry.
2. Upon receipt of your entry fee, BSI will mail submission binders to you for completion. *Please note that NO entry fee will be returned in the event your entry is not submitted.* Submission binders will be returned upon your request.

Schedule

Entry Form and Fees Deadline: **September 28, 2009**

Submission Binders Deadline: *November 16, 2009*

Judging: *January 22, 2010*

Tucker Awards Presentation: *May 14, 2010*

Yale University, New Haven, Connecticut.

.....

Name and location of project(s) entered (use additional sheets if necessary):

Fee Schedule: The entry fee is \$100.00 for the first submission and \$75.00 for each additional submission. There is no limit to the number of entries.

Person submitting entry: _____

Firm: _____

Address: _____

City: _____ State: _____ ZIP: _____

Country: _____

Telephone: _____ Fax: _____

E-mail: _____

Enclosed is a check in the amount of \$ _____ for the above indicated entry/entries.

Or, please charge to: VISA MasterCard American Express

Card Number: _____ Exp. Date: _____

Name on Card: _____

Signature: **X** _____

Please return my submission binder.

.....

Please complete and return form(s) and fees before September 28, 2009.

Building Stone Institute

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For questions, please call (518) 803-4336.

Past jurors for the Tucker Design Awards have included:

Richard Foster, FAIA
Hugh Hardy, FAIA
John Johansen, FAIA
Samuel Brody, FAIA
M. Paul Friedberg, FASLA, AIP
Hamilton Smith, FAIA
John Morris Dixon, FAIA
Gerald Allen, AIA
Harry C. Wolf, FAIA
Charles G. Hilgenhurst, FAIA
William H. Livingston, Jr., AIA
F. Thomas Schmitt, AIA
John H. Burgee, FAIA
William E. Pedersen, FAIA
Robert A.M. Stern, FAIA
A. Eugene Kohn, FAIA
Malcolm Holzman, FAIA
Walter F. Wagner, Jr., FAIA
Danforth Toan, FAIA
William Conklin, FAIA
Douglas Brenner, AIA
Herbert L. Smith, Jr., FAIA
Alan Ritchie, AIA
Frank C. Marcellino, AIA
Herbert Beckhard, FAIA
Robert M. Kliment, FAIA
Mildred F. Schmertz, FAIA
Der Scutt, FAIA
Paul Rudolph, FAIA
Elliott Willensky, FAIA
Roger Yee, AIA
Howard N. Horri, FAIA
Stephen P. King, FAIA
Richard Bergmann, FAIA
Philip W. Dinsmore, FAIA
James Kingsland, AIA
Bruce S. Fowle, FAIA
Peter S. Forbes, FAIA
Steven L. Einhorn, FAIA
Melvin Brecher, FAIA
Eric A. Chung, FAIA
Frank D. Nemeth, AIA
John Peter Barie, AIA
Leonard Jacobson, FAIA
Earl Flansburgh, FAIA
Alan Goldberg, FAIA
Frank Richlan, AIA
Frederick A. Bland, FAIA
Stanley Tigerman, FAIA
Charles A. Linn, FAIA
Frances Halsband, FAIA
Harold Roth, FAIA
Bradford White Fiske, AIA
Robert A. Ivy, FAIA
James R. Morter, FAIA
Barry W. Starke, FASLA
Peter H. Dominick, FAIA
George Hoover, FAIA
Robert Murase, FASLA
Marvin Malecha, FAIA
Leslie N. Boney, Jr., FAIA
Thomas Blasley, FASLA
James L. Nagle, FAIA
Peter Lindsay Schaudt, FAAR, ASLA
Randolph E. Guillot, AIA
Randall C. Gideon, FAIA
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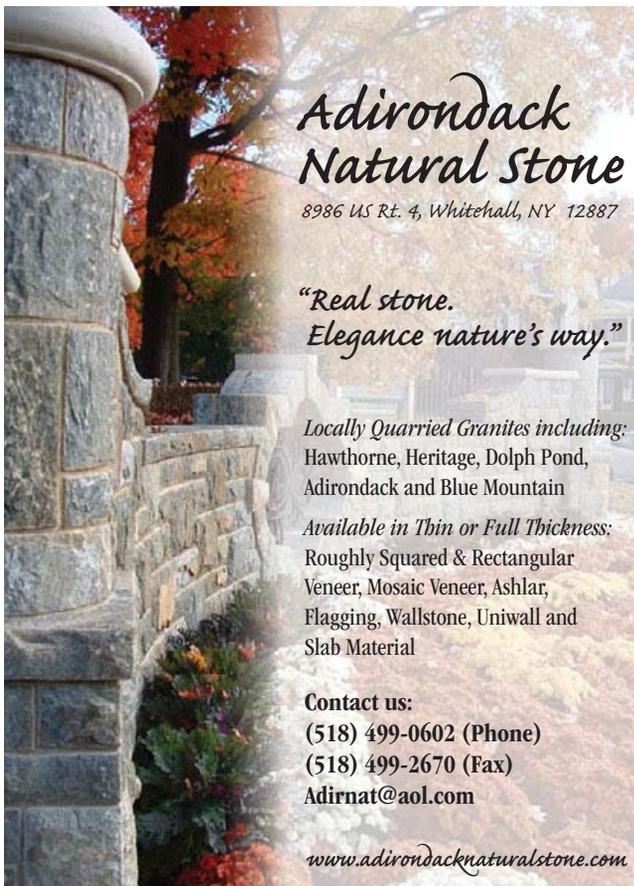
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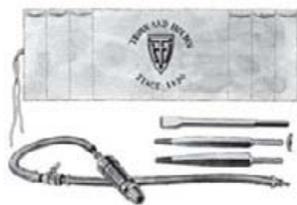
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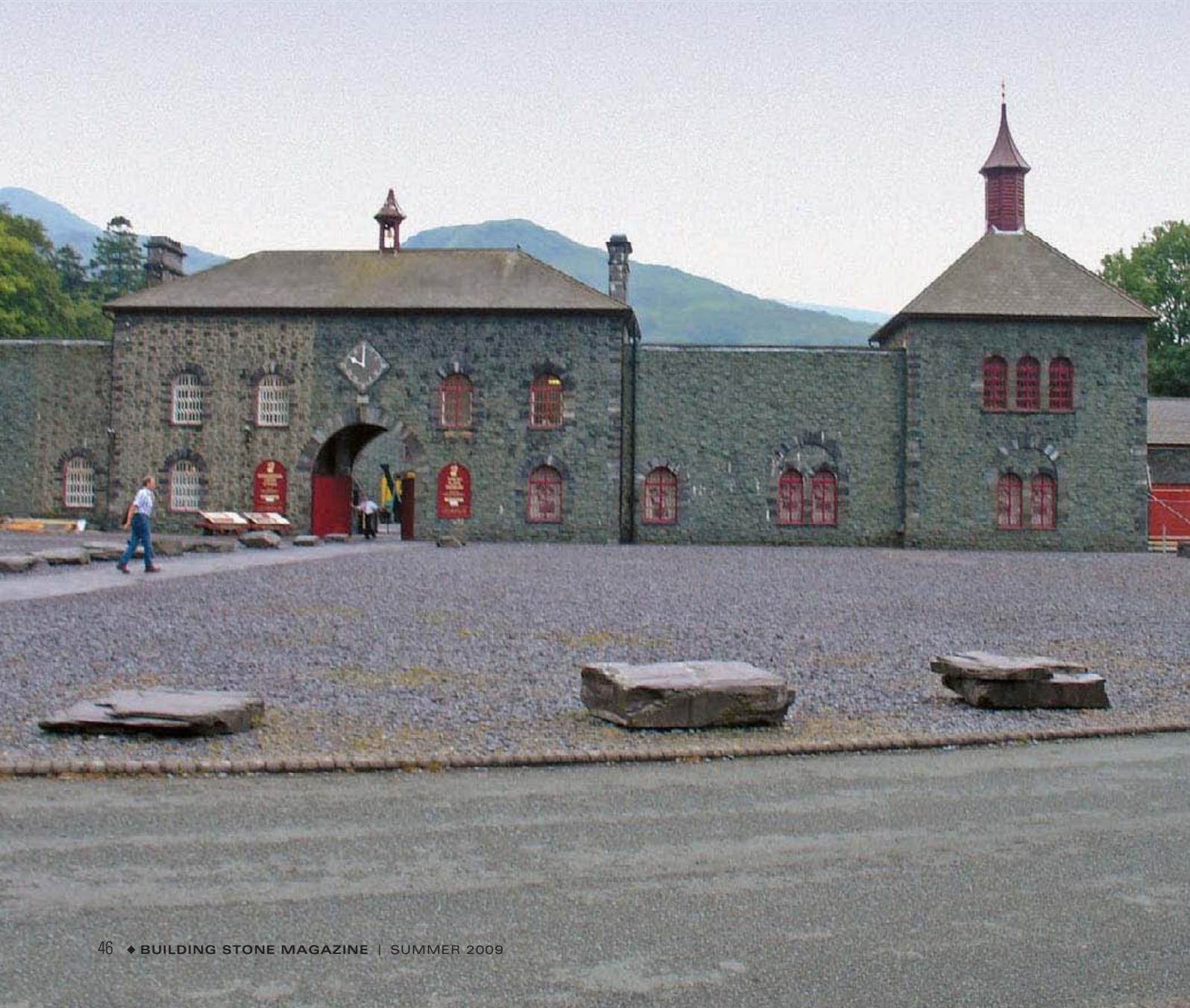




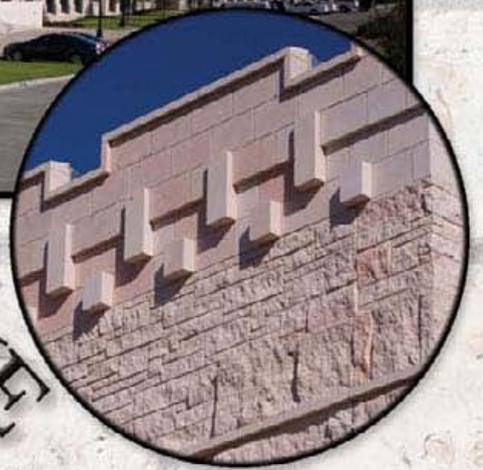

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LOOKING AT THE picturesque building and the lush surroundings of National Slate Museum in the village of Llanberis, Gwynedd, Wales, it's easy to imagine Victorian workers quarrying slate in the 19th century workshops that once serviced and maintained the no-longer-used Dinorwic slate quarry. The museum is located within the flourishing landscape of Padarn County Park; it lies in the shadow of the soaring Eladir mountain and features several innovative slate-related exhibits to educate locals and tourists about this versatile and beautiful natural stone.

A grant for more than \$2.4 million from the Heritage Lottery Fund made it possible for the museum to offer features like the largest working waterwheel in mainland Britain, slate-splitting demonstrations and displays of Victorian era slateworkers' cottages. Visitors also can enjoy tours of the iron and brass foundry, view the forges and locomotive shed and the old water-powered machinery that made the tools for quarrying slate. For more information, visit www.museumwales.ac.uk/en/slate/. *Photo by Galen R. Frysinger* ◆



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