Building Stone MAGAZINE

Summer 2006
Volume 29, Number 2

THIN STONE

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On the Cover:
Natural Stone Veneers International's Sydney limestone thin stone with an appealing over grout yields a rustic old world feel without the weight of full-dimensional stone.

Photography courtesy of Natural Stone Veneers International

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Natural Thin Stone Veneer

J. Kevan Busik

HISTORICALLY, THE MOST BASIC building product was natural stone. There are 5,000-year-old structures that have used this building product that continue to exist today. Man has used this product to walk on, carve and decorate his living area for thousands of years. Stone is the universal building material. We have tried to copy natural stone with concrete and duplicating Mother Nature's range of colors and textures. Yet through it all we have not been able to capture the warmth and feel of real stone.

For some applications, one of the only problems that existed with real stone was the size and weight – it simply was not practical is some cases to use natural stone due to its weight. This issue was overcome on many high-rise buildings with the introduction of dimensional panel systems, which proved to be very successful in these specific types of applications.

Which brings us to today's latest adaptation of natural stone, and what the issue of this magazine is devoted to: thin stone veneer. This new thin stone veneer is not a panelized system; the natural thin stone veneer provides tremendous flexibility in patterns, shapes and colors that the thicker stone provides, however, there is a cost and times savings in the installation phase. The thinner stone requires less time to install and requires much less intense labor than its larger counterpart.

Another clear advantage of the natural stone is that, oftentimes, designers will decide to combine both thin and thick veneer on projects and no one can tell the difference between the thin and the thick because they are the same stone.

That being said, it is important to note that when you get your quote for thin stone from the producer, the price may be the same or higher than its thicker counterpart. This is a result of the increased production costs in shaping the thin veneer. Put the material cost together with the installation and you will see the savings. Undoubtedly, as technology advances and new equipment becomes available to produce this stone, the cost of production of the material will drop and you will probably see the material market prices drop.

As a designer you now have some *real* choices in your application of lightweight material. The beauty, longevity and permanence of *real* natural stone can now be used in a wider variety of applications. ◆

Building Stone MAGAZINE

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Thin Stone

By M. W. Penn

THIN STONE: It's what's happening in building stone. It's the latest buzzword, and there are valid reasons behind the excitement.

The fastest growing product of stone suppliers, thin stone is making real stone available to a much broader audience. It's developing a niche in applications where stone previously wouldn't have been considered because of cost or weight restrictions. It's the new solution.

What is Thin Stone?

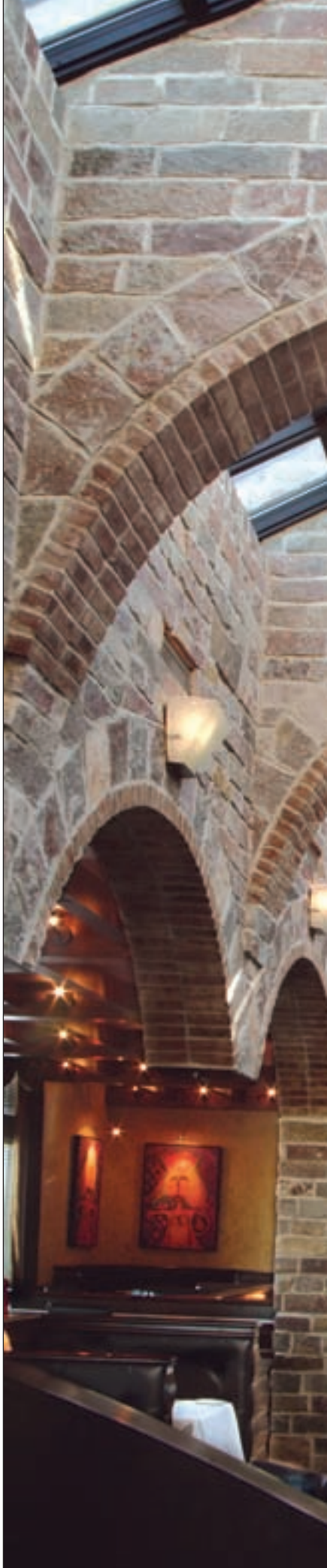
Beautiful, natural thin stone veneer is a facing product – real stone that doesn't need the ledger, footings or wall ties required by conventional, full veneer products. Instead, thin stone veneer is lightweight enough to be supported by the wall it covers. This means that builders can construct a conventional wood frame or block backup and apply real stone over the surface.

But is it "thin stone," "sliced stone" or "Natural Thin Veneer"? The product has taken off so quickly, even those who produce and sell it don't refer to it by a single name. Outside the business, these interchangeable terms have sometimes led to confusion. Real stone tile is thin, stone panels designed for building facings, as is the stone facing of precast concrete panels. Is there a difference between these products and what the industry refers to as "thin stone"?

Joe Dellacroce, CEO of Connecticut Stone Supplies, defined his thin stone product this way: "Thin stone is natural or rough-cut stone in an ashlar or a mosaic pattern, fitted together like standard four-inch or six-inch bed depth, rough-cut stone. Because thin stone is cut to a 3/4-inch to 1-1/4-inch depth, it offers the dimensional beauty of natural, rough-cut stone to any interior or exterior surface, without the expensive support structures required by conventional full-stone products."

Ron Vetter, president of Vetter Stone Company/Alabama Stone Company, clarified it further: "Thin stone is strictly thin, split-face stone, and not smooth stone adhered to a panelized system; a

RIGHT: The stone archways in this private residence were designed and created by Zach Builders using Chilton Rustic NTV.
Photo courtesy of Buechel Stone Corporation



'honeycomb' panelized system is another natural stone building product, but quite different than thin split-face stone."

Installation

The weight restriction for thin set masonry applications is 15 lbs./sq. ft.; any stone above 15 lbs./sq. ft. is too heavy for a thin-set application. For this reason, installing natural stone veneers in thicknesses that vary from three to eight inches requires ledges, footings and wall ties. But thin stone veneer is light enough to comply with these restrictions, and therefore does not require any additional structural support – it is truly a facing product.

Buechel Stone Corporation, a central Wisconsin quarry and fabricator of building stone, has specific "How To" guidelines for the installation of their Natural Thin Veneer. The guidelines state that the stone is lightweight enough to be installed on any structurally sound surface using "a standard mortar mix of good working consistency." Bonding agents can be added to mortar to increase its bond strength, but are normally not required if correct application procedures are followed.

On unpainted, untreated masonry, the mortar and stone facing is applied directly to the surface. On other surfaces, a metal lath or mesh of corrosion-resistant material is first attached to the surface and a thin scratch coat of mortar is applied. Once this coat has set, the stone facing

LEFT: Baccio Restaurant in Minnetonka, Minn. was designed by Trellage-Ferrill using Chilton Castle Rock NTV – Full Color/Custom Blend.
Photo courtesy of Buechel Stone Corporation

RIGHT: The main entrance to the Crossroads Mall in St. Cloud, Minn., showcases Fond du Lac Cambrian Blend NTV with vertical installation of some of the stone and a blend of Buff Gray and Mill Creek Castle Rock.
Photo courtesy of Buechel Stone Corporation

is affixed to the wall by applying mortar to the back of the stone and pressing it to the wall. On dry interior applications, thin stone can also be adhered to the back-up wall using special epoxy adhesives approved for thin stone applications.

For exterior surfaces, a moisture barrier must be applied to wood surfaces before the metal lath is attached, and in many instances a weeping material is also recommended. A final joint grouting will also help the wall resist moisture penetration.

Advantages of Cost

Full-depth veneer natural stone is regarded as the premium choice for high-end home and building construction, but its thinly sliced counterpart yields cost advantages that make it the right choice for several types of applications, especially those with tight budget restrictions.

First, there is the advantage of not requiring structural support; builders can install thin stone on a conventional frame or block structure. Then there is the element of time. Following the guidelines from Buechel Stone, thin stone can be installed in about half the time as full veneer, cutting this expense in half; it's also easier for masons to handle. Shop drawings are not necessary, eliminating another costly step. And shipping costs are reduced; because of its size and weight, more thin stone can be shipped per truckload.

Kevan Busik, CEO of Delaware Quarries/Pebble Junction, said, "Masons historically can install about 35 sq. ft. of four-inch full veneer in one work day. In comparison, efficient installers can install in excess of 100 sq. ft. of our Tru-Stone® thin veneer in one day. Since the most costly part of any installation is the labor, a big benefit of thin veneer is that a masonry crew can produce three times more installed footage in the same time. This translates into more jobs that same crew can take on in the same period of time. Builders like the fact that they can complete the structure faster."

BELOW LEFT: From the Lannon Quarry of Halquist Stone Company, Mayfair Blend thin limestone is bedface stone in a full range of colors.
Photo courtesy of Halquist Stone

BELOW RIGHT: Ocean Pearl Split Face thin stone veneer from K2 Quarries helps create the face to this zero clearance fireplace.
Photo courtesy of K2 Stone Quarries Inc.

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LEFT: A home exterior featuring K2 Quarries' Ocean Pearl natural ledgestone veneer.
Photo courtesy of K2 Stone Quarries Inc.

The transport savings are important, too. In the present global economy, stone is often quarried on one continent, fabricated on a second, and used in a construction project on still a third, so transportation costs have become an increasingly significant part of the formula when selecting stone. Depending on distance, the cost difference in transport is often dramatic. Joe Dellacroce gave the following example: Connecticut Stone bid a distant job that required 120,000 sq. ft. of stone. The weight of four-inch depth veneer for the project was 3,400 tons. With a shipping cost of $140/ton, the cost of shipping alone was $476,000. When the same job was quoted using thin stone, the weight of the stone required for the job dropped to

K2 Stone Quarries Inc.
COST COMPARISON
(2,000 Square Foot Installation)

4" LEDGESTONE

Product Cost:
U.S. Dealer Price of $250 per ton
Approximately 40 square foot coverage per ton
Thus requires 50 tons to do the job
TOTAL PRODUCT COST = $12,500 (50 x $250)

Shipping Cost:
$110 per ton to ship to Southern California
TOTAL SHIPPING COST = $5,500 (50 x $110)

Wholesaler Mark-up:
Approximately 50% mark-up
TOTAL PRODUCT COST (Including shipping and mark-up) = $27,000 (18,000 x 1.5)

Site Preparation Cost:
Addition to the footing to hold the added weight
TOTAL SITE PREPARATION COST = $2,000

Installation Cost:
Assume for $25 per square foot to install this product
TOTAL INSTALLATION COST = $50,000 (2,000 x $25)

TOTAL COST FOR 2,000 SQUARE FEET OF INSTALLED 4" LEDGESTONE = $79,000 (27,000 + 2,000 + 50,000)

NATURAL LEDGESTONE VENEER

Product Cost:
U.S. Dealer Price of $8.50 per square foot
2,000 square foot installation
TOTAL PRODUCT COST = $17,000 (2,000 x $8.50)

Shipping Cost:
$110 per ton to ship to Southern California
Natural Ledgestone Veneer weighs approximately 13 lbs per square foot
Thus 2,000 square feet weighs approximately 13 tons (13 x 2,000 / 2,000)
TOTAL SHIPPING COST = $1,430 (13 x $110)

Wholesaler Mark-up:
Approximately 50% mark-up
TOTAL PRODUCT COST (Including shipping and mark-up) = $27,645 (18,430 x 1.5)

Site Preparation Cost:
No site preparation required
TOTAL SITE PREPARATION COST = $0

Installation Cost:
Assume for $15 per square foot to install this product
TOTAL INSTALLATION COST = $30,000 (2,000 x $15)

TOTAL COST FOR 2000 SQUARE FEET OF INSTALLED 4" LEDGESTONE = $57,645 (27,645 +0+30,000)

800 tons, and the shipping cost was reduced to $112,000.

K2 Stone Quarries Inc., Nanaimo, British Columbia, ships much of its beautiful Ocean Pearl natural stone products to markets in California. Mike Crape of K2 Stone Quarries provided the accompanying cost analysis of a typical distant installation of their stone, which demonstrates savings of more than $25,000 on a modest 2,000 sq. ft. installation.

Production Costs

Though major savings result from both transport and installation, production costs of thin stone are comparable to full-depth veneer. As Crape explained, "The primary reason that thin stone costs more to produce per square foot is the amount of work that goes into cutting the stone, both in labor and machinery costs. At K2, we utilize basic mason hand saws to cut the corners, as well as a thin stone TXS Stone Veneer Fabrication System from Park Industries to cut the product."

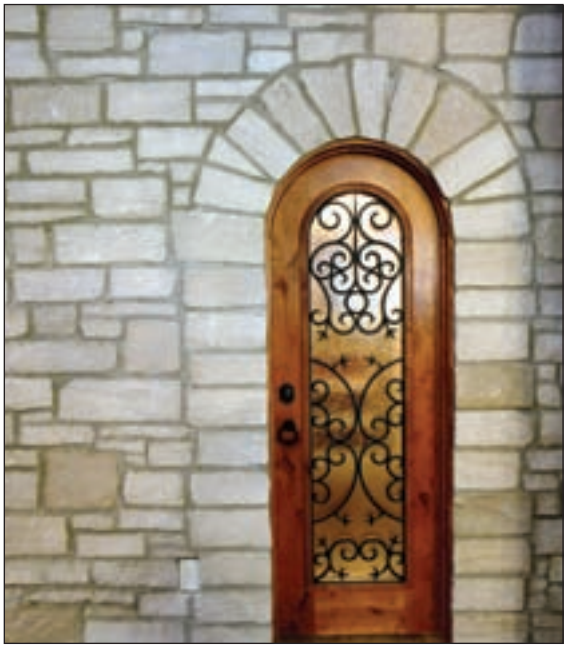
Dellacroce added that the cost of production varies with the type of stone being cut. "The hardness of the stone is a factor in thin stone production cost. Saw blades wear out much more quickly when we're cutting granite."

Waste is not a major factor of the production figures for thin stone. At both K2 Quarries and Connecticut Stone, any remaining stone is fabricated into a number of other products with very little waste resulting from the original cut piece of stone. The other products might include cobble stones, stepping stones, pond rocks or wall stone – in fact, any product dictated by the type and dimension of the stone.

ABOVE: Alabama Silver Shadow thin stone, part of Vetter Stone Company's Calyxo thin stone line, adorns this stately lakefront home.
Photo courtesy of Vetter Stone

Thin Stone vs. Manufactured Products

Kevan Busik said, "We have been producing full veneer for



ABOVE TOP: A private residence featuring a rustic yet elegant look created with Chilton Heritage Blend NTV. Designed by Whiteford Associates, Inc.
Photo courtesy of Buechel Stone Corporation

ABOVE: Thin stone can be cut in the shape of corbels, lintels, keystones and other architectural details, such as this arch at the entrance to a wine cellar attests. Thin stone is from Vetter Stone Company.
Photo courtesy of Deichman Construction

ABOVE RIGHT: Natural Stone Veneers International's Virginia Ledgestone faces a dramatic fireplace.
Photo courtesy of Natural Stone Veneers International

60 years and thin veneer for 30 years. It became apparent to us that we needed to offer a product that would compete head to head against the various concrete veneer suppliers. This product would have to meet stringent building code seismic requirements; in addition, we also needed to offer corner pieces that would meet those same building codes."

Natural thin stone veneer is installed with the same simplicity and ease as manufactured stone but has advantages over manufactured products in color, durability and versatility.

First, natural stone is colorfast. Since it is quarried from the earth, natural stone has qualities of color and texture that can never be reproduced – each piece is unique. Unlike manufactured

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THINSTONE VENEER

products, there is never a risk of natural stone developing a repeating pattern, which is unavoidable on large installations of manufactured products. And, because thin stone is natural stone, it's available in all the colors and blends of full veneer, an important point to remember when there is the chance that both stone dimensions will be combined in the same project.

Also, natural stone is more durable than manufactured stone; it resists chipping and scratching to a much greater degree. In addition, if a piece of natural stone should chip, the inner core presents the same color and texture as the surface of the stone. This isn't the case with manufactured products, which are only pigmented on the surface; when manufactured stone is chipped or cut, the edges have to be re-colored.

Over time, other problems often develop with an artificial stone installation. The material could shrink due to drying and carbonation. This isn't the case with natural stone, which has been cured to perfection; eons have elapsed since its production. Manufactured stone will also wick much more moisture than natural stone, eventually causing an installation to deteriorate; in fact, it is recommended that manufactured stone appli-

ABOVE TOP: Beautiful, natural thin stone veneer is a natural facing product that doesn't need the ledger, footings or wall ties required by conventional full veneer products. Halquist Stone Company of Sussex, Wis., supplied the thin stone for this soaring wall.
Photo courtesy of Halquist Stone

ABOVE: This private residence in Michigan featuring Chilton Kensington Blend NTV, designed by JA Janiga.
Photo courtesy of Buechel Stone Corporation

cations begin four inches above soil or two inches above concrete to keep moisture from being absorbed into the surface.

Natural thin stone can be custom cut to an architect or builder's specifications. As long as building code size and weight guidelines are followed, thin stone can be cut in the shape of corbels, lintels, keystones and other architectural details and applied to a wall using the same masonry techniques as flat wall stones. Also, corner returns can be cut at odd angles of other than 90 degrees. Finally, thin stone can also be cut or trimmed on the job site to exacting measurements.

In the important area of shipping, thin stone also has an advantage. It can be boxed and shipped using the same size and weight structures as manufactured stone – five-, 10- and 100-sq. ft. shipping containers. Using this method, shipping costs remain in line for both natural and manufactured products.

Thin stone can also be shipped on pallets. In the case of manufactured stone, which will chip and weather, this more economical and convenient shipping method is not an option. For instance, Connecticut Stone uses 100 sq. ft. and 240 sq. ft. pallets to ship its thin stone products, and Delaware Quarries packages its products in 10 sq. ft./ln. ft. cartons, 100 sq. ft./ln. ft. packs and 250 sq.ft. pallets.

Because thin veneer is often stored outside and because the weight of the product requires a package that won't buckle from boxes stacked above them on the master pallet or deteriorate from

ABOVE: Vetter Stone Company's Calyxo thin stone adorns this lake home and feature Silver Shadow Alabama Stone in a Spring Pattern.
Photo courtesy of Vetter Stone

ABOVE: This Colorado residence achieves beauty and distinction through architect Thomas Epps' use of Fond du Lac Heritage Blend NTV on the home's exterior and landscaping.
Photo courtesy of Buechel Stone Corporation

the sun, rain or snow, Busik created innovative packaging for his company's thin veneer. "We looked in the market and did not find anything that had the structural integrity necessary for the harsh environment of the construction industry. Working with our supplier we designed our own unique package."

Busik also thought it important to print graphical installation instructions right on the box in both English and Spanish. He said it's "an added touch that makes a positive difference in how our customers view our products."

Increased Production

Because cost is almost always a factor in choosing a building material, the cost savings derived from both transport and installation of thin stone should exponentially increase the use of natural stone, and this increase should occur quickly. In fact, some stone suppliers are already experiencing phenomenal growth.

Crape of K2 Stone Quarries Inc.: "Based on the amount of Natural Thin Veneer (NTV) that we produced last year and the demand that we see for the products in the coming year, we would expect to have to more than triple our production of NTV in the coming year. We see our sales skyrocketing by as much as 1,000 percent in the next 12 months, and growing from just 25 percent of our total sales last year to better than 50 percent this year. We expect this amount to increase as a direct result of NTV being utilized by more and more consumers as awareness grows of its advantages over manufactured products."

In the words of Joe Dellacroce, "We can't even begin to estimate the growth thin stone will bring to our industry. It's breathtaking." ◆

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Designing with Thin Stone

By M. W. Penn

OPPOSITE PAGE: A striking new condominium complex on Grand Traverse Bay displays Natural Stone Veneers International Sydney limestone in a random ashlar pattern.
Photo courtesy of Natural Stone Veneers International / Apple Photography

ABOVE: Monarch Blend limestone from the Chilton Quarry of Halquist Stone demonstrates the versatility of thinstone. These corners were cut at a 135-degree angle.
Photo courtesy of Halquist Stone

NATURAL STONE: Throughout history it has always been the most sound and visually appealing of all building products available to man. Stone is the basis for architecture: Egyptian pyramids, Greek temples, Roman walls, Gothic cathedrals and Renaissance palaces. Is it even possible to imagine a world of architecture without stone?

Today, stone remains the first choice of architects and designers. Natural stone has high strength, low absorption and excellent resistance to weathering, all proven by long-lasting performance. And stone is beautiful, embodying the richness, colors and textures that only nature can produce.

Now thin stone brings real stone into the realm of renovation and interior decorating. Since stone is no longer confined to floors and walls that have been designed with proper support structures for increased weight, natural stone has been transformed into a material that can be included, not only during the final stages of construction, but also during a remodeling or redecorating project. Natural thin veneer is a potential choice in projects as diverse as facing a backsplash, a fountain or a zero clearance fireplace, covering con-

crete foundations, block walls, retaining walls or the exterior of an entire house. Natural stone can be used to enhance any part of any building at any time.

Ease of Installation

Adhered natural thin stone veneer is a beautiful, versatile wall covering. And it is just that – stone supported by the wall it faces. The structural backup behind the stone veneer does all the work in resisting loads. This backup wall may be wood framing, metal framing, concrete block or poured-in-place concrete.

Installation of adhered natural thin stone veneer is relatively straightforward. It may be applied directly over any masonry surface such as concrete block, brick or cement. One restriction is that the underlying masonry surface must be clean, and painted masonry surfaces must be stripped of paint. But this isn't a problem.

If it's difficult to clean a masonry surface, or if a surface is composed of material other than masonry construction, there is a simple installation method. First a non-corrosive metal mesh or lath is attached to the wall. The lath is covered completely with a thin scratch coat of mortar, which is lightly raked into horizontal grooves and allowed to set up or cure. This, in effect, creates a masonry surface to which the thin stone veneer may be applied. It's really that simple.

As with all adhered finishes, it is important to provide adequate damp-proofing and drainage when using thin stone in adverse conditions. All masonry veneers are water-resistant, not waterproof; any time moisture is a concern, a moisture barrier should be installed beneath the metal lath, and exterior veneer should always have a backing system that resists water penetration. Standards and codes vary for different regions, depending on weather conditions; in some regions an additional weeping material is applied over the water-resistant membrane. Stone veneers used to face retaining walls, the decking around swimming pools or the splash zone near roadways will also need special care in detailing, but they are a viable solution for these areas.

The recommendation for aesthetic application of thin stone is similar to that of full veneer. Prior to setting, it is important to determine how the stones will be laid out; any necessary trimming should also be done at this time. As with all masonry projects, an experienced mason with the ability to fit stones in an attractive pattern will greatly enhance the appearance.

LEFT TOP: Dense limestone from Halquist Stone's upper-peninsula quarry, Peninsula Crème Thin in a random ashlar pattern faces this full height fireplace.
Photo courtesy of Halquist Stone

LEFT BOTTOM: Buechel Stone Corporation, of Chilton, Wis., supplied one-inch thick Chilton, custom tailored, for the back wall of the fountain at Crossroads Mall and Fond du Lac for the stone features. The six-inch high base has a honed face and trimmed edges.
Photo courtesy of Buechel Stone Corporation

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Thin Stone in Design

The color, texture and beauty of natural stone veneers enhance any design, making stone veneers appropriate for use in commercial, residential, institutional and public projects.

Thin stone veneer is available in a wide variety of stone of different densities, colors, textures and shapes with the most popular shapes corresponding to the shapes of full depth veneer: roughly square/roughly rectangular will be composed of large blocks of stone with 90-degree corners; mosaic, often described as a broken ice pattern, is composed of large irregular pieces of stone; ashlar split face stone is cut into long, narrow pieces and assembled like stacked brick; stacked ledge stone has the look of rustic stacked stone; fieldstone veneer can be natural thin or round fieldstone, and has either a flat or rounded surface.

Still, these don't begin to suggest the possibilities for the size and shape of thin stone, which can be custom cut to an architect's or builder's specifications. Corner returns are not only available – they can be hewn in odd angles of other than 90 degrees. And thin stone can be produced in the shape of lintels, corbels, keystones or other architectural details within the limits of UBC recommendations. Since thin stone is real stone, masons can also cut or trim pieces on the job site to fit exact specifications.

Some restrictions must be considered in thin stone veneer installations and are the same that apply to all masonry veneer. The

ABOVE: Mosaic, often described as a broken ice pattern, is composed of large irregular pieces of stone. This is Connecticut Stone Supply's Old Spruce Mountain Mosaic.
Photo courtesy of Connecticut Stone Supply

OPPOSITE PAGE: On one wall of the Crossroads Mall food court, rugged natural thinstone veneer creates the appearance of an authentic alluvial outcropping with water cascading down the stone in four separate areas and flowing into a raised stone trough.
Photo courtesy of KKE Architects

UBC weight restriction for any thin set masonry application is 15 lbs./sq. ft., so that adhered thin stone veneer units may not weigh more than 15 lbs./sq. ft.; otherwise, the stone installation becomes too heavy to be supported by the wall. For veneers weighing less than 3 lbs./sq. ft., UBC specifies no limit on dimensions or area for each unit, but for veneer units between three and 15 lbs./sq. ft., dimension and area restrictions also apply. For example, for veneers of this weight, no side of any unit can exceed 36 inches in length, and the overall face area of each stone may not be greater than 720 square inches.

Architectural Solutions in Thin Stone

A Fountain Wall

Cesar Pelli, who has great enthusiasm for public gathering places, encourages architects and designers to include generous amounts of stone in beautiful patterns and textures in their design of all public spaces. He believes that natural stone gives the public a deserved sense of nobility.

More than 130,000 square feet of Valders Dovewhite honed panels were used on this Salt Lake City hospital. Ornamental Stone Sculptures, natural boulders and pavers integrate the sitework with the building exterior.

Eden Country Manor scales this wall while being accented by an arch and key in the same natural stone material.

ABOVE TOP: A close-up of the plaster and thin stone mix that was used to preserve the integrity of the stone exterior without the added expense of additional support structures.
Photo courtesy of Spencer Brickwork Inc.

ABOVE BOTTOM: The Silver Shadow Alabama thinstone on the Curtis residence was furnished with a split face and split top and bottom edges.
Photography courtesy of Deichman Construction

In many ways, food courts in malls have become the new public gathering place for neighborhoods and communities; they can provide a space for casual meetings or public events and, reflecting the social function of sixteenth-century Italian piazzas, they often serve as a town's living room. The food court at the Crossroads Mall in St. Cloud, Minn., is a stellar example of bringing nobility to this type of public gathering place.

A new addition to an existing mall, the interior design of the court provides the public a warm, comfortable space. Clerestory windows and skylights bathe the court with natural light, while gently curved panels suspended from the exposed overhead structure give a sense of ceiling and provide more intimacy to the space. Booths of purveyors are arranged in a long arc facing a seating area designed to accommodate 750 people. Special attention was given to the use of natural materials and finishes; maple wood and local granite are featured throughout. The most dramatic feature of the design is the wall opposite the food court tenants. This wall features rugged stone designed to resemble an authentic alluvial outcropping; water cascades down the stone in four separate areas and flows into a raised stone trough.

Due to the cost overruns, full-dimension stone veneer could not be included in the construction of the proposed fountain wall, but a manufactured stone alternative could not be guaranteed to withstand the erosion of constant flowing water. In the end, the use of thin stone veneer provided the only feasible way to implement the design.

Bill Miller of KKE Architects was enthusiastic about the way the plan was implemented. "The fountain was designed and installed as one entire enclosed unit, and natural thin stone veneer was applied directly over the surface of the water feature's walls and basin. One of the major cost advantages was in the labor involved. A mason can install three times the square foot area of thin stone in the same time it would take to set regular veneer, resulting is significant savings."

Miller specified Buechel Stone Corporation's one-inch thick Chilton NTV in a blend of Buff Gray and Mill Creek Castle Rock for the back wall and Fond du Lac Cambrian Blend NTV for the stone features, applied in both a linear and vertical drystack ashlar pattern. He added that the product was readily available and caused no delays. The joints of the stone were grouted in areas where the stone veneer was exposed to water, but the integrity of the water system is a function of the fountain's structure. Thus, the most impressive element, the natural stone "outcropping," is simply a decorative addition to the wall.

A Residence in Madison Lake, Minn.

Mark Deichman of Deichman Construction in Mankato, Minn., said, "You can have real stone anywhere you can have a manufactured product." He installed more than 5,000 sq. ft. of Silver Shadow Alabama thin stone at the Curtis residence in Madison Lake, Minn. The grand home was originally designed using manufactured stone because of cost and ease of installation until the owner was introduced to the thin stone produced by Vetter Stone Company. The material finally selected for the home was furnished with a split face and split top and bottom edges; and it was competitive with the original cost budgeted for the manufacture stone.

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ABOVE TOP: 3,000 sq. ft. of Natural Stone Veneers International Virginia Ledgestone was used in the total renovation of a 1950s Frank Lloyd Wright-style house in Cambridge, Mass., featured in *This Old House Magazine*.
Photography courtesy of Natural Stone Veneers International

The stone fits the home's natural lake surroundings so well that it was brought inside to adorn feature walls and the entrance to an old world wine cellar. Architectural details such as framed archways were replicated in thin stone.

A Total Remodel of This Old House

Natural Stone Veneers International (NSVI), a natural stone fabrication company, fabricates natural thin veneer stone for interior and exterior building applications. In less than three years, NSVI has emerged as a leader in the stone industry with its diverse natural thin veneer stone products, distribution and marketing. It has developed patented equipment that allows stone to be cut to approximately one-inch to a 1-1⁄2-inch thickness. The company also has designed a plastic corrugated box that can stand up to the outdoor elements and improve transport; they have developed a crate for larger orders, too, to make shipping more convenient. NSVI fabricates 50 different types of stone, quarried nationally and internationally, and continues to add to their product line.

Three thousand sq. ft. of NSVI Virginia Ledgestone was used in the total renovation of a 1950s Frank Lloyd Wright-style house in Cambridge, Mass., featured in *This Old House Magazine*. The quartzite stone was chosen for texture and color; its softly varied earth tones modulate from brown to gray, and also include some shining silver stones in its natural color range. The renovation made the most of the home's small lot by incorporating the veneer in the landscaping and bringing it into the interior on both the staircase and on the fireplace.

Condos on the Bay

Traverse City, Mich., has a striking new condominium com-

ABOVE BOTTOM: In the Southwest, the very same Natural Stone Veneers International Sydney limestone thin stone used on the Traverse City Condo is given a completely different look when set with an appealing over grout. The over grout yields a rustic, old world feel to the veneer.
Photography courtesy of Natural Stone Veneers International

plex on Grand Traverse Bay; and Natural Stone Veneers International's Sydney limestone in a random ashlar pattern adds to the beauty of the waterfront property. Eight thousand sq. ft. of the buff-colored stone covers much of the exterior of the building. A unique feature of the design is 18-inch deep door and window recesses. The recesses were a simple construction because of the use of thin stone veneer. Corner cut stone was used at the turn into the recesses, which were then framed with flat pieces of thinstone.

In another section of the country, in the Southwest, the very same Sydney limestone thinstone is given a completely different look. Instead of each stone being defined to its edge, in this part of the country the stones are often set with an appealing overgrout. This yields a rustic, old-world feel to the veneer.

A Private Residence of Baronial Proportions

John Spencer of Spencer Brickwork Inc. frequently uses thin stone in combination with full thickness stone veneer. In a new 10,430-sq.-ft. residence in Missouri, the owner wanted "stone everywhere: dormers, gables, bays." On this project, $600,000 of exterior masonry included 400 tons of Silverdale and Cottonwood limestone and two trailers of carved Silverdale trim.

Some areas of the exterior couldn't support the load of full thickness veneer without the construction of additional support systems, but the presence of stone was needed to maintain the integrity of the design. In these areas, the walls were plastered in a complementary shade and thin stone was blended into the mix.

Robert Srote, AIA, a partner in Dick Busch Architects, the firm that designed the residence, had

ABOVE: This 10,430-sq.-ft. private residence includes $600,000 of exterior masonry, including 400 tons of Silverdale and Cottonwood limestone.
Photo courtesy of Spencer Brickwork, Inc.

this to say of thin stone: "We encourage the selection of building stones, which are not brittle so that in instances where it isn't practical to structurally support the stone via steel beams or other means, such as at dormer sidewalls or suspended gables, we can utilize the same building stone. We slice it and attach it directly to a mortar setting bed with little or no additional structural support required below. This allows us to continue the use of the same stone veneer on areas of the home where we would have traditionally switched to other materials such as stucco or siding."

LEFT: A combination of mortar and thin cottonwood stone transforms the appearance of what were once bright, siding-clad chimneys on villas at Meadowbrook Country Club.
Photo courtesy of Spencer Brickwork, Inc.

Golf Course Villas

In fact, thin stone is becoming the optimal way to continue a beautiful, unified appearance in natural stone. Spencer provides another example:

Barry Simon, builder of the Villas at Meadowbrook, a golf course community situated on the sixth and ninth holes of Meadowbrook Country Club in Ballwin, Mo., was heading down the fairway when he noticed bright, siding-clad chimneys on the homes. Aside from the chimneys, the exteriors of the gracious homes facing the course were a combination of brick and stone, and the siding "stuck out."

The solution used to blend the chimneys into the landscape was both effective and cost-effective. Without need for additional support, an application of mortar and thin cottonwood stone was applied; the thin stone enhanced the appearance of each home and preserved the beauty of the view from the links.

An Ocean View

The owners of a charming 2,200-sq.-ft. ranch home in San Pedro, Calif., used Lompoc natural thin stone veneer, supplied by Sepulveda Building Materials Inc., to create a patio and landscaped terraces on a steeply sloping front yard that also had space limitations. The incorporation of the terraces and a serpentine stairway leading up to the front patio gives the homeowners access to their front door and, as a bonus, a beautiful view of Catalina, Newport Beach and the Los Angeles Harbor.

It was the advantages of weight and depth of the thin stone application that allowed them to create a place for relaxing and entertaining in a restricted terrain that had formerly denied them the advan-

tage of the spectacular ocean view. Complex, three-tiered walls were architecturally designed and approved to hold natural thin stone veneer in the area where full-dimension natural stone would have been out of the question. The use of space saving natural thin stone veneer also allowed them to incorporate a wider driveway, decorative planters and lighting fixtures.

Lompoc Mountain Ledge Gray Blend thin veneer and Lompoc #1 Premier Cut thin veneer laid in an ashlar pattern were used on the walls – topped by Lompoc's 10-inch wide, two-inch thick wall cap – and cut into in random lengths. To blend with the natural stone on the walls, the paving on the patio and stair treads is Lompoc Oatmeal Flagstone.

ABOVE: Incorporating terraces and a new front patio of Lompoc Quarries' natural thin stone veneer created space for entertaining on a steeply sloping front yard with space limitations.
Photo courtesy Dave Hardison, Lompoc Quarries

Some Considerations in Specifying Thin Cut Stone

The production of denser granite thin stone versus thin stone cut from sedimentary rocks such as limestone or sandstone is simply a matter of the stone supplier compensating for varying degrees of hardness during the cutting process. Once the stone is cut, thin veneer retains all the characteristics of its source stone. All natural stone is inherently durable, but there are so many varieties and densities of natural stone that not every stone is suggested for exterior use in all climates. For best results, in areas of severe weath-

ABOVE: Alabama Silver Shadow thin stone, part of Vetter Stone Company's Calyxo thinstone line, adorns this stately lakefront home.
Photo courtesy of Vetter Stone

er conditions, specify stone and masonry materials that have been tested for proper performance in these conditions.

Natural stone is stable and will not move of its own accord. But in character with all adhered applications, stone veneer will move with its backup wall as the structure responds to loads, vibrations, temperature variations and foundation settlement. All veneer applications are relatively stiff and well matched to a concrete block or poured-in-place concrete backup system. Wood and steel framing, on the other hand, are more flexible. Wood framing is particularly susceptible to movement as the wood swells during damp periods and shrinks when it dries. Choosing a stiff backup structure and incorporating movement joints into the design always help prevent future cracking of any adhered surface.

Thin Stone

If you want the look of full veneer and the pride in knowing that you have chosen natural stone without many of the associated costs, thin stone veneer is the perfect choice. It's another solution to the universal desire of builders to use natural stone, a solution limited only by imagination. ◆

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Chilton, Wis.
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www.buechelstone.com

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Milford, Conn.
(203) 876-7525
www.connecticutstone.com

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Mark Deichman Construction
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Natural Stone Veneers International
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Rocky Mountain Masonry Institute
Denver, Colo.
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www.rmmi.org

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LEFT: In areas of the exterior that couldn't support a full thickness stone load without additional support, the walls were plastered and thin stone was blended into the mix.
Photo courtesy of Spencer Brickwork Inc.

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GRANITE COUNTERTOPS:

Old World Meets New World

By Jodi Paper

Photo courtesy of Granite Tops Inc.

CHOOSING THE PROPER MATERIAL for a countertop is a big decision and requires that many considerations be taken into account. Appearance, strength, durability, sustainability and, of course, price are key factors in making a choice that will leave the consumer satisfied and, ultimately, proud. Some common options on the market today are plastic laminates, ceramic tile, stainless steel, concrete, natural stones (marble, granite, slate, soapstone) and wood. Each material has its advantages; however, granite seems to have more advantages that make it adaptable to the kitchen.

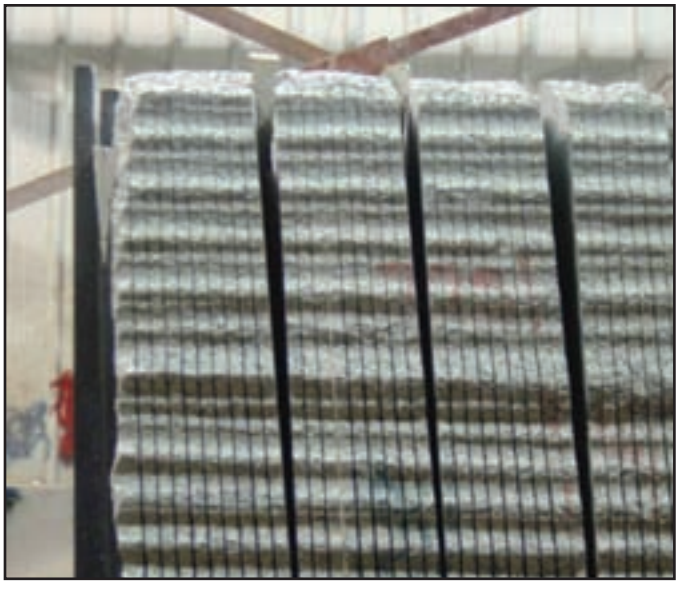
Granite is an igneous, magma-formed rock that is generally made up of quartz, feldspar and mica. These minerals combine in varying percentages that account for the color, veining and crystallization patterns that make each granite deposit – and therefore customized countertop – unique. Other minerals, such as magnetite, pyrite, garnet and hematite can occur in much smaller amounts, and as such, it is these different combinations that create the wide range of granite varieties that are available throughout the world.

Technology Drives Innovation

Over the years, granite has developed from a largely struc-

ABOVE: Cold Spring Granite's Kasota Valley limestone quarry in Mankato, Minn.
Photo courtesy of Cold Spring Granite

BELOW: Granite slabs from a gang shot saw.
Photo courtesy of Cold Spring Granite



tural material affordable only to the wealthy, to a stone that has numerous applications – countertops quickly becoming one of the most popular – and greater availability and mass appeal. One of the reasons for this increase in accessibility is the advance of technology used to quarry the stone.

"New technology minimizes the costs and brings granite into the home," explained Jim Janochoski, national sales manager at Cold Spring Granite in Cold Spring, Minn., which owns more than 30 quarries, fabricates granite slabs, and is one of the largest suppliers in the country for granite.

Whereas in the past, excavating granite from a deposit required an elaborate process of drilling, pounding, sawing and blasting, now – with the use of diamond wire saws, which look like wires, but are covered in diamond segments – quarriers are able to saw whole blocks of granite in a faster and more streamlined manner.

"Diamond wire saws are a less intrusive, less abusive way to pull stone out of the ground," Janochoski said. "And the reduction in cost brings granite from a more commercial [venue] to a more residential one."

Once you have decided to install granite countertops in your home or business, you need to find the right people to help you through the process from start to finish.

"You need to have a professional who knows what is required for installation, is familiar with granite and how it works,

FROM TOP TO BOTTOM: Mesabi Black Antique slab; Carnelian Antique slab; Applying thermal finish to slab.
Photo courtesy of Cold Spring Granite

and knows how to gather the information and measurements to fabricate the piece correctly," said Chuck Monson, the CEO and COB of Dakota Granite, a Milbank, S.D., quarrier of granite for countertops, as well as granite monuments, memorials, pavers and tile, among other things. The company owns and operates five quarries, four of which are located in South Dakota, and the fifth in Minnesota. "Our expertise is in providing raw material to processors who cut the slabs and supply them to fabricators."

Kip Cameron is president of Granite Tops Inc., a natural stone fabricator also located in Cold Spring, Minn. "We put the customer in contact with production coordinators and then send an expert out [to the person's home] to do a field measurement, walking the customer through the kitchen." The next step is the creation of a template, which is brought back to the company's headquarters for fabrication. "From field measure to installation, the entire process takes two weeks, maybe less."

Granite is more than just a pretty face. The stone is second only to diamonds in hardness, which accounts for the effec-

ABOVE:
Photo courtesy of Granite Tops Inc.

BELOW: Before and after.
Photo courtesy of GranitClad

tiveness of diamonds in facilitating the quarrying of the natural stone. It is granite's toughness and durability that make it such a desirable countertop material. It won't break or crack, and it is virtually scratch and stain resistant.

A polished finish is generally the most popular, allowing for simple "wipe and go" cleaning. According to Janochoski, about 80 percent of his customers prefer the polished look. However, more non-reflective, toned-down finishes, like "honed" – a smooth, soft and slightly matted look – and Cold Spring Granite's own "antique" – also smooth and soft, but with a more leather-like appearance – are growing in favor. And with such a vast range of colors available and the uniqueness of each one, it is no wonder that more and more people are welcoming granite into their homes.

"Granite requires minimal maintenance, it's all-natural, durable, and there are so many colors – black, blues, greens, yellows, reds, browns and golds," Janochoski said. "Granite is a proven product of choice."

Thin Stone – for Countertops

Another development that has helped make granite more accessible for the home is the newer thin stone countertops, which are applied directly over the existing countertops. These offer a lot of the benefits of granite, but are less expensive, and easier and faster to install.

"Thin stone countertops are a new and innovative product," said Troy Zwick, national sales manager for Marshall Innovative Technologies, a distributor of thin stone based in Southfield, Mich. Whereas traditional granite countertops generally use a 1-1/4-inch

(3 cm) slab, these thin stone slabs are 100 percent natural granite, at a third the thickness.

"Our product is a one-centimeter (3/8-inch) slab reinforced with fiberglass mesh," Zwick continued. "Our thin stone is manufactured in Italy, and then shipped to the United States."

Marshall Innovative Technologies is the exclusive distributing arm in North America for this particular thin stone, and sells the product through certified GranitClad fabricators. "GranitClad is a patent-pending process that has perfected a niche in the market for the remodeling industry," Zwick said. He went on to say that the process is "less invasive to the lifestyle [of the customer]. We can actually resurface the client's existing countertops within a

LEFT: A worker mans a kip machine.
Photo courtesy of Granite Tops Inc.

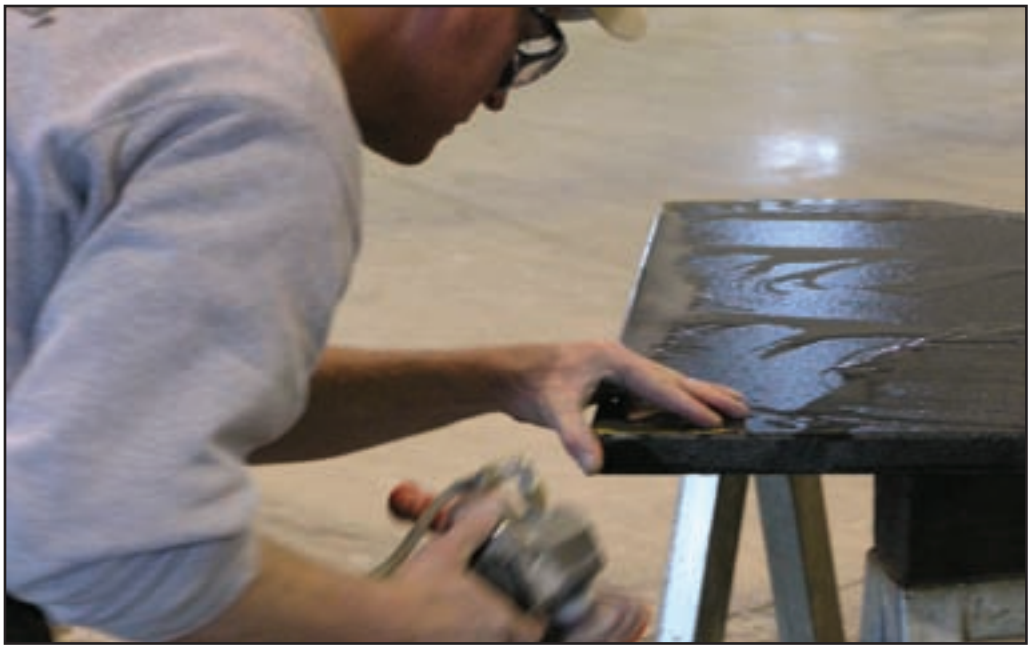


Photo courtesy of Granite Tops Inc.

few hours ... because no tear-out is required."

"Instead of the customer having to rip everything out," he continued, "we simply lay the stone over the [existing] countertop."

Granite has functioned as a building material as far back as ancient Egypt, where it was used in a number of pyramids. Clearly the stone stands the test of time. Though initially used in these greater-scale structures, granite has proven to be a product of great versatility. As granite's usability grows, so does it's demand. "Granite has evolved from an exclusive to a must-have," Cameron said. Whether in it's tried and true traditional form, or the newer thin-stone fabrications, as far as countertops are concerned, granite is a stone to be reckoned with. ◆

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Milbank, S.D.
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Granite Tops Inc.
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A Hokie Stone by Any Other Name is not Hokie Stone

By Jodi Paper

All photos courtesy of Virginia Tech

VIRGINIA TECH IS BUILT on a 100-year-old tradition that comes out of the same earth as the Appalachian Mountains that rest nearby. That tradition is Hokie Stone, a dolomite limestone that is quarried locally, just miles from campus. For more than a hundred years, Hokie Stone has been the main ingredient in the buildings that make up the Blacksburg campus of Virginia Tech.

Hokie Stone is named as such because of the key role the word "hokie" has played in the traditions of the school. Virginia Tech was founded in 1872, and was originally known as Virginia Agricultural and Mechanical College, and then Virginia Agricultural and Mechanical College and Polytechnic Institute. Because the name was such a mouthful, people started referring to the school as VPI. Following the change in moniker was a proposed change of the VPI official spirit. A contest was held – the prize for the best song was five dollars – and the winner was "Old Hokie," written by O.M. Stull, class of 1896. Stull made up the nonsensical word to be used in the cheer. And the rest, as they say, is history.

But what is in a name? Hokie Stone is not exclusive to Virginia. The stone can be found in Tennessee and Alabama as well. "Dolomite limestone," explained Mark Helms, director of Grounds at Virginia Tech, "can be found virtually anywhere in the world. Ours is just unique because the sediment is particularly rich in manganese and iron ore, which give the stone its color."

RIGHT: Burruss Hall administrative building on the drill field with biomarker commemorating Julian Ashby Burruss, Virginia Tech's past president, 1919-1945.

OPPOSITE PAGE: Hokie Stone quarry

A rainbow of colors is more like it. Each cut stone is different, but all contain some combination of shades of yellow, salmon, gray and black. "And sometimes you can see a reddish, rusty color," said Clara Cox, who is director of University Publications. "Sometimes, during certain times of the day, when the sun is low in the sky and hitting the buildings … though they are all constructed of Hokie Stone, they each appear to be a different color. It's absolutely beautiful."

Actually, when Hokie Stone is first quarried and fresh from its excavation, it appears to be only one color. "Everything comes out grey," Helms said. "Once it becomes weathered – with the rain and the sun and oxidation – that's when it changes color."

Birth of a Hokie Stone

There are two quarries, both of which are owned and operated by Virginia Tech, where the Hokie Stone is removed. The main quarry is 40 acres and it is worked everyday. Eighty percent of the Hokie Stone used on campus comes from this quarry. The other 20 percent comes from the smaller quarry, which is located on a local farm and typically operated once a year.

Although the main quarry is located in a residential neighborhood, disturbance to the area – the amount of noise and dust – is limited. "We use black powder [as an explosive to remove the stone] because it's relatively quiet," Helms explained. The powder also keeps breakage of the stone more controlled. "We want to crack the stone, not make gravel," he said. "We want to get the largest pieces as possible."

From there, the stone goes through a process of drilling and splitting to break it into a more manageable size. Generally they use a 1-3/4 drill and a concrete splitter, which gets the stone small enough to fit through a hydraulic press, or a 3/4-inch drill with additional use of shims, wedges and sledgehammers. "Hokie Stone splits a lot like firewood," Helms said.

ABOVE TOP: The Inn at Virginia Tech and Skelton Conference Center entrance

ABOVE: Torgersen Bridge, named for Past President Paul E. Torgersen, connecting Torgersen Hall and Newman Library

OPPOSITE PAGE: New Holtzman Alumni Center and clock tower with The Inn at Virginia Tech and Skelton Conference Center

Then the stones are squared the old-fashioned way – by hand – using a hammer and chisel. This allows the masons to shape and size the material so it will fit together in blocks. Every piece comes out different and is eventually laid in a random-ashlar pattern for the buildings.

Generally, there are about 25 to 30 people working the quarry at any given time, though this number increases or decreases depending on the season; in summer there are more, winter less. Everyone that works at the quarry is a Virginia Tech employee. "One person can produce one ton of finished product per day," Helms said, which adds up to about 55 tons per week or 2,600 tons per year. One ton covers about 35 square feet of construction. "A typical campus building will use around 1,500 tons of stone."

Helms sees the school's undertaking of all aspects of the quarrying and production of Hokie Stone as one of the qualities that makes Virginia Tech so unique. "There are lots of gorgeous stone quarries in the world," Helms said. "But I don't know of any university, besides Virginia Tech, that does it all themselves."

The Turning Point

Hokie Stone was first used in the construction of a YMCA, built in 1901. In 1917, the construction of McBryde Hall introduced what was to become the official style of campus buildings.

"McBryde Hall is the first significant structure that brought Hokie Stone and the neo-Gothic style of architecture together," said Scott Hurst, the university architect. "When this campus started in 1872, it was being built with a look that grew out of the downtown area of Blacksburg, which consisted of plain, simple brick structures."

But this look was unsatisfactory to Joseph Eggleston, who was president of the school from 1913 to 1919. "Early on, Eggleston had as his image for the appearance of the school a change of direction. It was important to him to have buildings that were durable and that spoke to a certain timelessness. [His outlook] became a major turning point for campus."

In the '60s and '70s, Virginia Tech made a brief foray into a more modernist style of architecture, dabbling in concrete and – once again – brick. But this abandonment of Hokie Stone and neo-Gothicism didn't last. In 1990, the Virginia Tech Board

of Visitors made a formal decree that a certain amount of Hokie Stone be incorporated into the construction of every new building on campus.

Beyond the buildings, Hokie Stone is used minimally in only a few other capacities. Currently it is used in the structure of biomarkers, which Cox described as "biographical sketches about the people campus buildings are named after." The sketches are cast on bronze plaques, which are mounted on Hokie Stone pedestals. In certain places, biomarkers are sometimes accompanied by Hokie Stone sitting walls that are topped with concrete. "Occasionally we might carve out a piece of Hokie Stone and polish it for a gift to present to someone, but this is rare," Cox said.

A Lasting Tradition

"We have some strong traditions here," Hurst said. "Hokie Stone is an important hallmark that really defines this campus." He noted the fact that the popular material is local and durable, which makes it so sustainable. "The idea of a campus to be able to look beyond the design of a single building … it is the collection of buildings that makes this campus greater than the sum of its parts."

Hurst finds a great deal of inspiration in the school's tradition of incorporating Hokie Stone into every building on campus. "It wasn't until after 1974, when I became a student [at Virginia Tech] that I came to fully understand how critical stone is to the history and beauty of a place." ◆

WATER DRAINAGE:

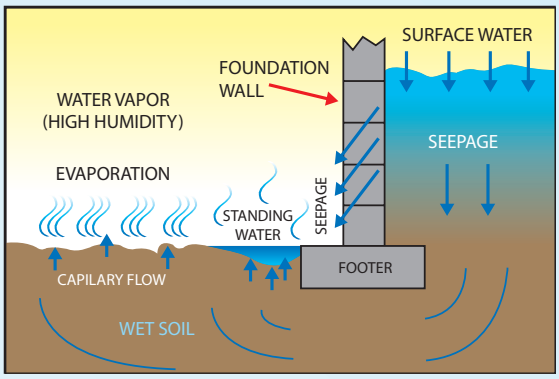
Keeping it Dry

By Mark Haverstock

THERE'S A LONG-STANDING joke in the waterproofing industry – most waterproofing systems work well when there is no moisture. But in the real world, moisture is a fact of life in most climates where natural thin stone is installed. To maintain wall integrity and prevent problems such as water seepage, mold or other types of damage, architects and installers need to plan for the inevitable fact that if water is present, it will likely find a way in.

THE PHYSICS BEHIND WATER MOVEMENT

Water moves in mysterious ways, but it's all explainable. Here's the science behind it:



Capillary action is defined as the movement of water within the spaces of a porous material due to the forces of adhesion, cohesion and surface tension. Capillary action occurs because water is sticky – water molecules stick to each other and to other substances, such as glass, cloth, organic tissues and soil. Dip a paper towel into a glass of water and the water will "climb" up the paper towel. In fact, it will keep going up the towel until the pull of gravity is too much for it to overcome. Weep systems use this principle along with gravity to remove water.

Gravitational pull on water is one force that moves it from a high point to a lower point. Water will move in a downward direction unless it is blocked by a heavier material or something that is held in the water's path. Cavity walls and weep systems use the force of gravity to evacuate water.

Vapor Drive occurs as warmer, more humid air is drawn to colder surfaces and seeks to penetrate or drive into the insulation and spaces between inner and outer walls. If the humid air begins to cool or condense, especially on non-permeable materials such as paint, metal or glass, water molecules bond together to create liquid water. The water may then begin "puddling" at low points in the wall.

Air pressure equalization happens when air with higher pressure moves toward areas of lower pressure. The air movement can cause water that may be present in or on wall voids to be pushed into a building where the air pressure is lower. This is also the case with wind-driven moisture, rain and waves of unequal air pressure.

Successful moisture control involves two steps: one is waterproofing and the second is drainage – keep as much water out of the wall system and remove any trapped water as quickly as possible. "Think of constructing your wall from the inside out – you start with the backup wall and end with the stone veneer," said Michael J. Scheffler, a senior consultant for Wiss, Janney and Elstner Associates. "Unless there is sufficient attention paid to moisture control at both steps, you're going to end up with problems."

To date, full and thin veneer installation have generally focused either on vapor barriers, flashing or just sealing exposed sections of walls. Not much thought is given to multiple preventive measures or incorporating drainage planes, which could avoid problems down the road.

"It's unfortunate that much of my customer base is made up of people that have experienced failures and paid for

OPPOSITE PAGE LEFT: Installed MTI Sure Cavity weep system and wall opening weeps.
Photo courtesy of Masonry Technologies, Inc.

TOP RIGHT: Completed stone wall showing wall opening weeps.
Photo courtesy of Masonry Technologies, Inc.

Installation steps for Buechel EMC 3639 on natural thin veneer project.
Photos courtesy of Buechel Stone

RIGHT: Installing cavity weep system EMC 3639.

them, or they have close associates who have experienced failures and paid for them," said John H. Koester, CEO of Masonry Technology Inc. "Traditionally, the industry has not really been open to using preventive measures. Now some major companies are finally coming out and saying you need drainage planes for thin veneer – period."

Several methods have been used over the years to avoid or control water problems in natural stone installation. The following is a brief discussion of the pros and cons of each.

Barrier Systems

Historically, most stone masonry walls were constructed as barrier walls. "The thickness of masonry between the exterior and interior surfaces was normally sufficient to prevent large amounts of water from migrating all the way through it," said Eric Peterson, an associate at Whitlock, Dalrymple, Poston and Associates. "The massive and solid wall construction forces water to travel a long distance though small interstitial spaces to get from one side of the wall to the other." The typical barrier wall would have the joints and cavity spaces between stones solidly filled with mortar creating a monolithic system and hence a barrier to prevent water from being transmitted through to the interior.

But the more modern thin stone generally provides only two inches or less of barrier and is attached directly to the wall, providing a much smaller buffer. Care must be taken during the installation process, or water may eventually find its way behind these relatively lean surfaces.

Stone Walls Are Stongest When They Can Weep

Where moisture is concerned, "holding it in" is a sign of weakness.

Those tall, cool walls stand erect for generations. But they're a bit more vulnerable than they may seem. Moisture can worm its way into their hearts-usually through the mortar, although other entry-points are possible. Temperature-variances can also create condensation behind those handsome façades.

Regardless of how it gets in, though, this water must weep out. Otherwise, even the toughest walls can suffer serious breakdowns. Such as mold-growth. Or mildew. Followed, far too often these days, by calls from lawyers.

Small wonder more and more masonry contractors are deciding that an ounce of prevention is worth many tons of remediation.

Mortar Net's advanced Stone & Stucco Drain™ delivers superior drainage for any kind of stone construction. Woven of our famously high-tech, 90% porous polyester mesh, the ¼" layer of Stone & Stucco Drain™ intercepts invading moisture, then diverts it down to the weeps and out of the building.

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Kevin Schultz, masonry consultant for Buechel Stone, points out that it's not so much the stone, but the mortar that can be a weak link in these installations, as it has about a 6 percent absorption rate. Other potential points of entry can be attributed to bad caulking, overly wide joints, insufficient waterproofing on the interior wall, interstitial voids or water ledges and ice ledges.

"Thin stone veneer's popularity has risen just within the last decade, so many long term effects with moisture in walls have yet to surface," Schultz said.

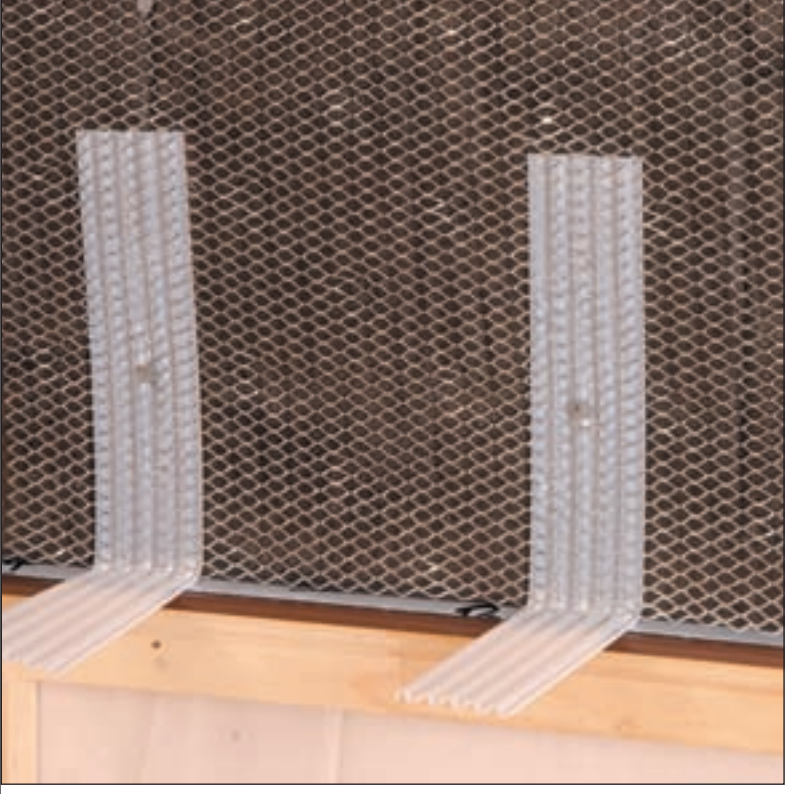
The Rocky Mountain Masonry Institute stated in its "Adhered Natural Stone Veneer Guide" that there are some instances where adding sealants may also help the wall resist moisture penetration as well as staining. The Institute advises application to areas that are prone to constant wetting, such as the base of walls, sills and caps. Ideally these products will help the veneer surface shed water,

TOP: Overlapping sections.

RIGHT: Installing wall opening weeps.

OPPOSITE PAGE: Attaching metal lath.

Photos courtesy of Buechel Stone



while allowing some of the water vapor from within the wall to escape.

Cavity Wall System

Barrier systems are not 100-percent effective at the start, and over time the material used to seal the joints can break down. You will eventually get breaches in that barrier. The cavity wall was introduced into buildings as a secondary protective measure because it is one of the most effective of all damp precautions – water cannot travel across a void. Most masonry assemblies are permeable to some degree, and sooner or later, especially with weak or incorrectly constructed joints, that masonry will let in water. Without a barrier of some kind, there is a chance that water will work its way indoors, however thick the wall. By inserting a clear cavity, that potential is significantly reduced.

The concept is to also manage water that may penetrate the outside wall. Any water that gets inside drops to the bottom of the wall where it is collected and evacuated. Essentially it is based on using flashing and some kind of waterproofing membrane or system that's applied to the interior wall. There's a vertical waterproofing component on the wall and a horizontal component, the flashing, which directs water out of the building.

Methods of collecting and evacuating that water vary. "Cotton rope weeps permit capillary action to draw some of the water out of the wall as well as providing a pathway with less resistance to drain any water building up in the cavity," Peterson said. "Open head weeps permit the water to drain out freely and also permit some air circulation into the cavity to dry it out, especially when used in conjunction with vents; however, they can also allow insects and additional water to infiltrate into the wall as well."

Thin Stone Drainage Systems

Though open cavities may be suitable for full-sized stone and full veneer, they are impractical for natural thin veneer installations, which are

applied directly to a wall. Products such as MTI's Sure Cavity and Buechel's EMC-3639 systems provide the necessary separation between the thin stone veneer and the structural backup walls.

"When you install it, you start with a vapor barrier of #15 felt and then you put the weep system over it – a piece of plastic with 3/16-inch corrugated channels," Schultz said. "There's a polypropylene fabric over the top of that, which allows water to get into those channels and drain, but keeps mortar from getting into those channels. You put the metal lath over that, add a scratch coat, and install the stone over top."

The corrugated drainage plane creates a percolation system that allows moisture that may enter from the exterior or condensation that may accumulate from the interior to travel downward toward weeps that are installed at the base of the wall. The water is then directed out and away from the wall, allowing it to vent properly and reducing the chance of mold and mildew growth.

"A predictable drainage plane in any wall system just makes good sense," Koester said. "If water gets in, the amount of time that the water spends in the wall is just as critical as the amount of water. People say they have

RAIN SCREENS:
AN OPEN APPROACH TO WATER CONTROL

Though rain screen systems aren't used with split-face stone, they present an interesting alternative for hand set, truss set and panelized systems for commercial buildings that utilize 1-3/16 inch thick granite, marble or two-inch thick limestone. It's a frequently used solution in Europe, but U.S. designers generally haven't bought into this technology yet.

"The rain screen system is the next evolution beyond the cavity system," said Michael J. Scheffler, senior consultant for Wiss, Janney and Elstner Associates. "It essentially does away with the exterior barrier – you don't seal the outside joints,"

Rain screens rely on air pressure and the backup wall to prevent water from getting in the building. "Essentially, if you create an airtight and watertight seal in your backup wall, then the air that's blowing against the wall ends up having equal pressure on the panel," Scheffler said. "If you think about water running down the wall when it rains, something has to make the water go across the joint to get to the back side of the panel. If you can equalize the pressure across the joint, so there is no difference, water just keeps running straight down – it won't go into the joint."

The rain screen approach assumes that little water will get into the joints, but if some does get in, the primary barrier is behind the stone. An added advantage is low maintenance – joint sealant doesn't need to be repaired, and the backup wall is protected from the environment, so it's not exposed to any elements that will degrade it.

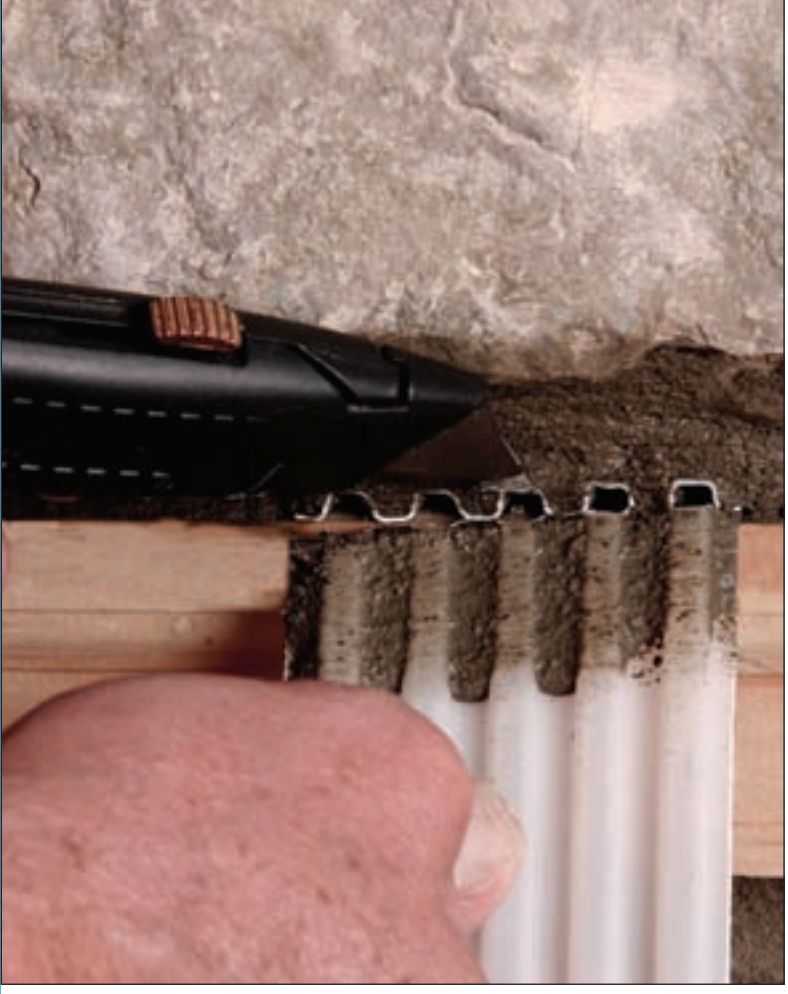
LEFT: Application of scratch coat.

ABOVE: Installing thin stone veneer.

OPPOSITE PAGE LEFT: Cutting off excess wall opening weep.

OPPOSITE PAGE RIGHT: Moisture can now run down and away from wall.

Photos courtesy of Buechel Stone



weeps in the wall, but if the water never gets to the weeps, what difference does it make whether you have them or not?"

Best Practices

All wall construction has the potential to get water inside. Good installation practices start from the inner wall out.

"If there's going to be a problem, it starts with the moisture-resistant barrier," said Steve Erickson of Robinson Brick Company. "It must be lapped correctly, have no holes or tears, and the flashing around the windows and base of the wall must be done correctly. If there's going to be penetration of water, more often than not, it starts with these problems."

Current standards, such as the 1997 Uniform Building Code (UBC) and the 2003 International Building Code (IBC), only specifically address weather resistive barriers and a means to drain water; however, to remain cost competitive, some have chosen to follow the minimum standards and have been slow to add weep systems to their water control strategies.

But Erickson and Koester agree that, despite the added costs, a drainage plane, along with properly installed moisture barriers, will become standard practice for thin stone veneer in the next year or two.

"The industry would win big by putting a separation barrier between the two – one that has the capabilities of getting water from a high point to a low point quickly and out the wall using weeps – and I believe most companies will eventually offer one of their own or from another supplier," Koester said. ◆

TOP: Palace and Victorian blend thin stone veneer benefit from Buechel's EMC-3639 moisture control technology.
Photo courtesy of Buechel Stone

LEFT: Moisture control using barrier systems is the most common method currently in use for thin stone veneer.
Photo courtesy of Buechel Stone

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Wiss, Janey, Elstner Associates Inc.
Northbrook, Ill.
(847) 272-7400
www.wje.com

Whitlock, Dalrymple, Poston and Associates Inc.
Manassas, Va.
(703) 257-9280
www.wdpa.com

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www.robinsonbrick.com

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From Ephemeral to Everlasting

By Christina B. Farnsworth • All photos courtesy of the Museum of Science and Industry

The Museum of Science and Industry, one of "The Seven Wonders of Chicago," preserves the last vestiges of Chicago's legendary 1893 Columbian Exposition. Its history is a soap opera of pride, peril and redemption.

The "City of Big Shoulders" was a fierce competitor in the battle to host the United State's 1893 Exposition, celebrating the 400th anniversary of "Columbus' Discovery of the New World." Chicago and its own local barons beat out New York, Washington, D.C., and others.

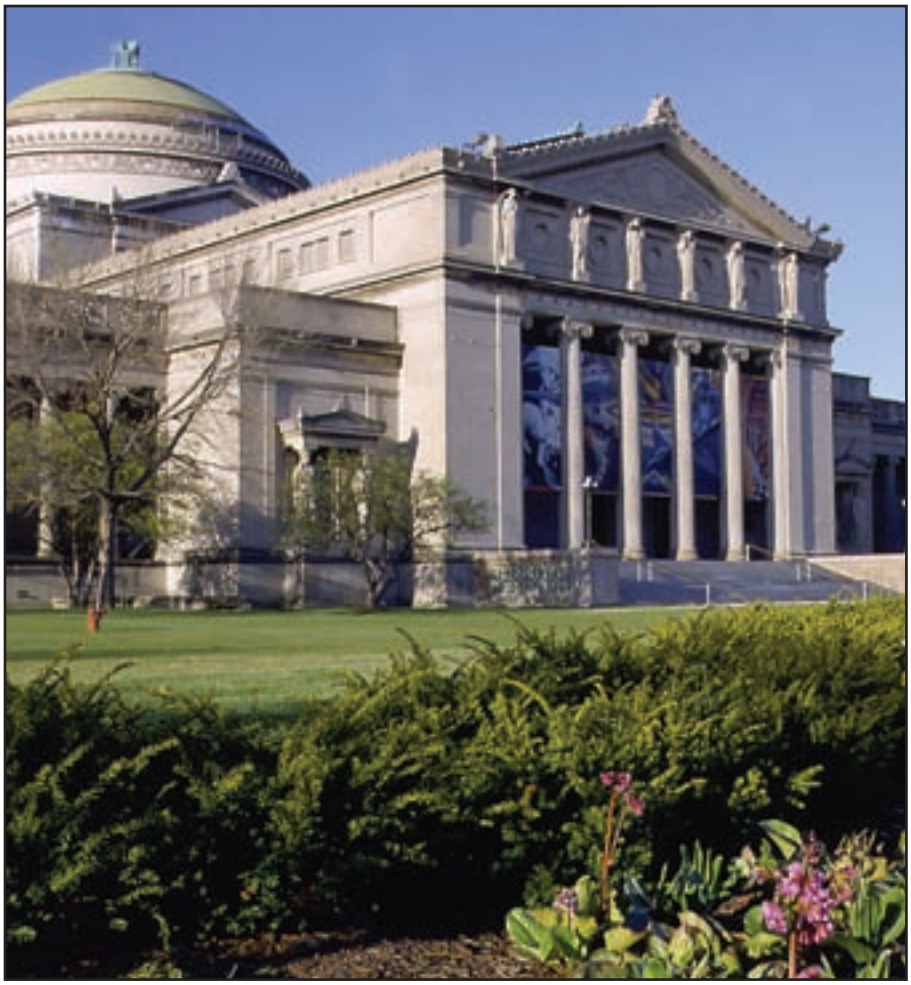
The team transformed a swamp seven miles south of Chicago's Loop, into the famed "White City." They drained and

sculpted land, created canals, lagoons and fountains. Famous architects, primarily from the East Coast (locals such as Louis Sullivan and Frank Lloyd Wright felt somewhat snubbed), designed buildings constructed of easily molded "staff," a mix of plaster and hemp fiber. Chicagoans turned to landscape experts Frederick Law Olmsted and Calvert Vaux to create a garden intended to outlive the Exposition and rival New York's Central Park. And project architect and planner Daniel H. Burnham became famous for his Chicago plan and the phrase, "Make no little plans."

The "White City's" color was not by design, but from necessity. The staff was expected to be colorfully painted and embellished, but this method proved unequal to Chicago's harsh lakefront weather. Months of experimentation lead to the invention of the world's first large-scale airless paint sprayer. A team of four workers cruised the grounds blasting barrels of white, lead, oil paint, "refreshing" every building in sight.

Today's Museum of Science and Industry was the Exposition's "Palace of Fine Arts," conceived as its only permanent building. It represented an ambitious world-class city and cost $541,795. To convince artists and collectors that massive displays of the finest art treasures were safe, New York-based architect Charles B. Atwood created an "externally fireproof" brick structure covered in the same fragile plaster staff as the rest of the Exposition.

Some thought the exposition a recreation of mythical Atlantis. Sculptor Augustus St. Gaudens exclaimed the palace building, "the finest thing done since the Parthenon." Others were not so kind. Famed architect Louis Sullivan agreed with fans that the Exposition's architecture would



sweep the country, but lamented that the Beaux Arts design would "set modern architecture back at least half a century."

More than 27 million people visited the exposition, and Chicago decided to make more buildings permanent. But a major depression and the resulting waves of industrial strikes turned the grounds into a homeless encampment before reconstruction could begin. The coal Chicago burned for heat and power had already dimmed the White City.

In 1894, Marshall Field – of department store fame – contributed his name and money for a natural history museum, The Field Museum, to be housed in the palace. In 1920, with the former Palace of Fine Arts building deteriorating, The Field Museum moved to its new home in Grant Park.

The now neglected Palace of Fine Arts building quickly fell to ruin. Its foundation weakened in the swampy soil. Winds and rain rusted the steel and chipped away at the plastered brick and wood. *Chicago Tribune* reporter Charles Leroux writes of the struggle to keep the building together with "the equivalent of duct tape." Once abandoned, critics called the old palace "a scaly, wormy pile that should be allowed to die." Public sentiment favored saving its last remnant of the White City, and in 1922 the Illinois Federation of Women's Clubs raised nearly $7,000 to "renew" a corner.

Julius Rosenwald, chairmanship of Sears Roebuck & Company, and department store rival of Field, decided the palace should house an industrial museum. With $3 million of his own money, Rosenwald convinced the influ-

CHICAGO'S MUSEUM OF SCIENCE AND INDUSTRY FACTS:

- Style Beaux-Arts - Ancient Greece
- 350,000 square-feet of Indiana limestone
- 500 feet long, 320 feet wide
- Transept 100 feet wide (60 feet glass), 70 feet high
- Dome 60-foot diameter, 125 feet high
- Two annexes: 120 feet long, 200 feet wide
- More than 140 rooms

ential Commercial Club of Chicago to back his plan. In 1926, the South Park District passed a $5 million bond issue for building restoration, though only the exterior would look exactly as it had in 1893.

More debate was yet in store, as terra cotta and stone vendors faced off in paid full-page ads and at Park Board meetings and newspaper editorials. Indiana limestone won with a contract of 28,000 tons of stone.

In 1929, R.C. Wieboldt Company officially launched the reconstruction by smashing a brick through a window of the old building. Construction continued through the Depression. Two years later, Wieboldt oversaw installation of the caryatids and statues he called "the ladies" over the portals.

Masons rebuilt the historic exterior entirely out of Indiana limestone. However, this was the new era, so the interior was a thoroughly modern Art Deco (some called it Art Moderne) design by architect Alfred Shaw, with 14-plus acres of terrazzo flooring.

Though only 10 percent of exhibit space was ready, the museum official grand opened in 1933 to coincide with The Century of Progress Exhibition.

Rosenwald had objected to the use of his name as the museum's. After his death, the edifice became simply The Museum of Science and Industry. It became an official Chicago landmark Nov. 1, 1995.

The Museum of Science and Industry's stone resurrection clearly enshrines the Columbia Exposition's legacy. ◆

BSI ANNOUNCES 2006 TUCKER DESIGN AWARD WINNERS

Sponsored by the Building Stone Institute and recognized as one of the most prestigious architectural design awards in the country, the Tucker Design Awards honor those who have achieved excellence in the incorporation and use of natural stone.

From around the globe, architects, landscape architects, interior designers and others who have achieved design excellence incorporating the use of natural stone entered this year's Tucker Design Awards competition.

And the winners are:

402 Redbud Trail, West Lake Hills, Texas

Architect: *Cottam Hargrave Architecture and Construction, Austin, Texas*
Stone Supplier: *Continental Quarriers, Inc. Florence, Texas*
Stone Installer: *JP Castelline Masonry, Austin, Texas*

Belvedere Gardens Mausoleum, Salem, Va.

Architect: *SMBW Architects P.C., Richmond, Va.*
Stone Supplier: *Scott Stone, Mebane, N.C.*
Stone Installer: *Jim Skiles, Antioch, Tenn.*

San Diego Padres Ballpark, San Diego

Design Architect: *Antoine Predock Architect P.C., Albuquerque, N.M.*
Executive Architect: *HOK Sport + Venue +Event, Kansas City, Mo.*
Stone Suppliers: *Stone A.V., USA, Plano, Texas; Modern Builders Supply, San Marco, Calif.*
Stone Installer: *Klaser Tile, Chula Vista, Calif.*

Art Collectors' Residence, Toronto, Ontario, Canada

Architect: *Hariri Pontarini Architects, Toronto, Ontario, Canada*
Stone Supplier: *Owen Sound Ledgerock, Ontario, Canada*
Stone Installer: *Rotundo Stone and Masonry, Toronto, Ontario, Canada*

Trinity Church Restoration, Boston

Architect: *Goody Clancy, Boston*
Stone Suppliers/Stone Installers: *Kenneth Castellucci & Associates Inc., Lincoln, R.I.; Port Morris Tile & Marble, Boston; Restoration Preservation Masonry, Northborough, Mass.*

Sigmund Stern Grove Renovation, San Francisco

Architect: *Office of Lawrence Halprin, San Francisco*
Stone Supplier: *Chen-Ragen LLC, Seattle*
Stone Installer: *QuarryHouse Inc., San Anselmo, Calif.*

Liberty Bell Center, Independence National Historic Park, Philadelphia

Architect: *Bohlin Cywinski Jackson, Philadelphia*
Stone Suppliers: *Vickery Stone Company, Havertown, Pa.; James Molyneaux Co., Newton Square, Pa.*
Stone Installers: *D.M. Sabia, & Company Inc., Conshohocken, Pa.; James Molyneaux Co., Newton Square, Pa.*

Unified Science Center, Swarthmore College, Swarthmore, Pa.

Architects: *Einhorn Yaffee Prescott, Architecture and Engineering P.C., Boston; Helfand Architecture P.C., New York (Architects in Association)*
Stone Supplier: *Media Quarry Co., Springfield, Pa.*
Stone Installer: *Davis-Giovinazzo Construction Co., Spring House, Pa.*

Factory for Synergy Lifestyles, Karur, Tamil Nadu, India

Architect: *SJK Architects, Mumbai, India*
Stone Supplier and Installer: *Bricksteel Enterprises, Bangalore, India*

MTA TBTA Brooklyn Battery Tunnel, Renovation/ Rehabilitation of Ventilation Building, Brooklyn, New York

Architect: *DiGeronimo P.A., Paramus, N.J.*
Stone Supplier: *Titan Stone, Tile and Masonry Inc., Harrison, N.J.; North Carolina Granite Corporation, Mt. Airy, N.C.*
Stone Installer: *Graciano Masonry, Pittsburgh, Pa.*

The Park at Lakeshore East, Chicago

Architects: *Site Design Group Ltd., Chicago; the Office of James Burnett, Houston*
Stone Suppliers: *Aspen Valley Landscape Supply, Park City, Ill.; Buechel Stone Corporation, Chilton, Wis.; Cold Spring Granite, Cold Spring, Minn.; Halquist Stone Company, Sussex, Wis.; Meno Stone Company, Lemont, Ill.*
Stone Installers: *John Synko Mark 1 Restoration Company, Dolton, Ill.; W.R. Weis Company Inc., Chicago*

Prothro House Addition and Remodel, Dallas

Architect: *Lawrence W. Speck of Page Southerland Page, Austin, Texas*
Stone Supplier: *Mezger Supply, Lampasas, Texas*
Stone Installer: *Fenimore-Blythe Masonry Contractors, Haltom City, Texas*

Congratulations to all of the winners!

Coming up in the fall issue of **Building Stone Magazine**, *we will feature each of these award-winning projects in the magazine.*

President Bush and Europa Stone Celebrate Small Business Week

Europa Stone Distributors welcomed President Bush to their new facility in Sterling, Va., on April 17. The President's Tax Day visit was a great honor for the seven-year-old company. Parties representing the various segments of the stone industry were brought together under Europa's roof for a round-table discussion with the president.

Europa Stone is honored that Bush chose them as a small business to visit on Tax Day 2006. The president's high regard and unwavering support for the small businesses of America have been instrumental in Europa Stone's success. Europa is also grateful to its world-class staff, trusted suppliers and loyal clients for making every year in business more stellar than the last.

The 6th Annual Sax Stonecarving Workshops

The Sax Stonecarving Workshops are just that: opportunities to work side by side with highly accomplished stone sculptors in a supportive atmosphere, where sharing of knowledge is given the highest priority. Daily structured demonstrations are followed by one-on-one meetings to address individual technical and artistic problems. Attendance is limited to 25 participants in order to foster the personal interaction necessary between teacher and student.

Open to all levels of experience, the workshops consist of two sessions. The first session, "Historic Carving Techniques Applied to Contemporary Carving Imperatives," will be held in Rinconada, N.M., July 22-26. The instructor for this session is Allen Williams of Chester Granite in Blandford, Mass.

Williams, a granite quarrier, carver, sculptor and stonework historian, has been teaching since 1977. Through discussion and demonstrations, he will cover the topics of: tool selection, care and use; reading the grain in stone; quarrying; rigging; cutting with fire; lettering; carving; and surface finishing. Williams will explore the history of the trade and how stone was cut and moved in the days before motors and electricity, and workshop participants will have the opportunity to view his extensive antique tool collection. This five-day course is a must for those committed to the art and craft of stonework.

The second session, "East Meets West," will be held in Rinconada, N.M., Aug. 14-20. The instructor is Joseph Kincannon, and the guest artist is Kazutaka Uchida.

Teaming up for their third straight year are guest artist Kazutaka Uchida of Tokyo and guest instructor Joseph Kincannon of Austin, Texas. Returning for the fourth time, Uchida is an inspired sculptor and offers an inspiring presence. He brings his exquisite Japanese aesthetic and his 40 years of carving experience to bear as he unlocks the inner beauty of the stone.

Kincannon, a guild-certified master carver, was the lead stone carver at the Cathedral of St. John the Divine in New York City for 11 years. His carving vocabulary and ability to communicate and demonstrate the traditional carving techniques of European carvers are exceptional.

For more information, contact Mark Saxe at (505) 579-9179, or e-mail sax@cybermesa.com. Applications and information are also available at www.saxstonecarving.com.

Buechel Stone Unveils New NTV Value Product Line

Buechel Stone announces the launch of its new Natural Thin Veneer (NTV) value product line. The product line offers a fresh new range of colors, is aggressively priced to compete with manufactured stone, and is available in building, fireplace and accent stone.

The stone types included in the value product line include Chilton Country Squire, Chilton Webwall, Chilton Sedona Rustic, Chilton Heritage Blend, Fond du Lac Country Squire, Fond du Lac Heritage Blend, Fond du Lac Webwall, Pine Log, Whispering Pines Pioneer Blend, Whispering Pines Fieldstone, and Whispering Pines Ledgestone. All of the products are 100-percent natural, quarried stone. Color ranges include buffs, reds, grays, pines, mauves, browns, tans and charcoals.

Buechel Stone Corp. quarries and manufactures a full line of building and landscape stone, which are distributed nationally and internationally through an extensive dealer network. The company has offices in Fond du Lac and Chilton, Wis., and employs more than 300 people.

For more information on Buechel Stone and its products, visit www.buechelstone.com.

Valders Stone & Marble Quarry Marks 100 Years

Valders Stone and Marble Inc., a division of Eden Stone Company, held an event celebrating 100 years of the quarry operation in Valders, Wis. Scheduled for May 18 at the Valders manufacturing facility, it will include remarks from management and elected officials, including Gov. James Doyle. Tours of the quarry, plant and office facilities will follow.

The Valders Stone quarry began operations in 1906 as a lump lime operation. Today, it is operated as Valders Stone and Marble Inc., with the primary product of the operation being dimensional cut limestone building products.

The quarry also produces rip-rap stone for public and private projects that is used for shoreline and harbor protection primarily for projects located on the shores of local lakes and waterways, Lake Michigan and its tributaries. In addition, limestone aggregate is produced from the limestone overburden and limestone material not utilized for cut stone or riprap.

New England Stone's Work Featured in *Better Homes and Gardens* Magazine

A client of New England Stone was recently featured in the March/April 2006 Kitchen and Bath Ideas feature of *Better Homes and Gardens* magazine. New England Stone is extremely pleased to have its work featured in such a prestigious publication, and thanks all of those who made this possible.

The clients used a classic material of natural stone fabricators: 3CM Juparana Colombo Granite Polished. The edge detail is 1/4-inch round-standard.

To view the article in its entirety, visit www.newenglandstone.com/newsdetails.

Cold Spring Granite Introduces Kasota Valley Limestone™

Cold Spring Granite quarried its first blocks of Kasota Valley Limestone in Minnesota's premier dolomite limestone region in July 2005. The rich and warm golden cream stone – sought for its strength and beauty – is now available for manufacturing.

While granite and limestone each have individual appeal and strength, the combination of these complementary stones is prevalent in the construction industry. When used together, granite and limestone build upon the strength of each material to create an enduring combination of performance and beauty.

For more information about Cold Spring Granite and its products, visit www.coldspringgranite.com.

Global Granite Opens New Louisville Showroom

Global Granite & Marble recently celebrated the opening of its new 3,000-square-foot natural stone showroom in Louisville, Ky., with a three-day open house for custom homebuilders, architects, interior designers and guests.

Headquartered in St. Louis, Global Granite & Marble is an importer and distributor of natural stone slabs, tile and trim, and precision tools and supplies for fabricators and installers.

The showroom complemented Global Granite's 50,000-square-foot warehouse, with its more than 2,000 slabs of natural stone, including granite, marble, limestone and slate. Showroom visitors were surrounded by natural stone samples from Brazil, China, Greece, India, Italy, Mexico, Pakistan, Portugal, Spain, Turkey and the United States.

Global Granite & Marble, which sells to the trade, but welcomes the public to its showroom, also offers natural stone decorative borders, base moldings, granite sinks, countertops, fireplace surrounds and floor, kitchen and bath tiles and trim.

For more information, visit www.globalgranite.com.

"Green California" Site Backs Schwarzenegger's Environmentally Sound Plan

Governor Arnold Schwarzenegger's administration unveiled a sweeping new "Green California" website, based on his vision of an energy efficient and environmentally friendly California.

The new website is filled with ideas, guidelines, reference materials, engineering data and environmentally friendly purchasing information to assist state and local government agencies and California businesses with the shift toward environmental sustainability, energy conservation and the reduction of landfill waste.

State and Consumer Services Agency Secretary Rosario Marin said he thinks the website will become a "go-to" site for engineers, architects, building managers, contractors, purchasing agents and other business and government officials and environmentalists.

The site, www.green.ca.gov, is focused primarily on two broad areas. It provides, in a single location, vital reference materials for the design, construction, benchmarking and operation of "green buildings." It also provides government and business purchasing officials with detailed information on environmentally friendly products and services, such as office supplies, paper products, office machines, vehicle supplies, building materials and medical supplies.

In a December 2004 executive order, Governor Schwarzenegger launched an aggressive action plan to reduce California's energy purchases for the thousands of state-

owned buildings by 20 percent by 2015, while conserving other scarce natural resources. The executive order also urged local governments, K-12 schools, universities, community colleges and business organizations to adopt the same ambitious goals. The new website provides vital reference material and "how-to-do-it" guidelines to implement that vision.

Visit www.green.ca.gov for more information.

Luck Stone Receives NSSGA Pinnacle Award

The National Stone, Sand and Gravel Association (NSSGA) recently honored Luck Stone Corporation at its annual convention in Tampa, Fla. The company received the most prestigious award, the Pinnacle Award, in the Community Relations category for its extensive community relations program of five-plus years that encompassed the following areas: safety initiatives, community outreach, donations, government involvement, communications, education, media relations and plant appearance.

Rich Wright, president of Luck Stone Corporation's Construction Aggregates division, attributed the distinguished award to the diligence of employees and their dedication to supporting their local communities.

Luck Stone garnered the award mainly for its Truck Safety program, which emphasizes improved relationships with contract haulers and strives to promote safe driving practices. For 10 years, Luck Stone has conducted the Trucker Safety program annually at most of its plants, and Lewis Lee, the district customer coordinator for Luck Stone's Northern Division, has addressed trucker meetings on courteous driving, tarp laws, stopping for school busses, speeding through subdivisions and environmental issues.

Superior Stone Equipment partners with Keystone Tools

Superior Stone Equipment announced that it has formed a partnership with nationwide supplier, Keystone Tools, to be a distributor for its Force 5000 bridge saw. Keystone Tools is a supplier of products for the marble and granite industry with mobile warehouses, retail stores in California, Texas, and Illinois, and nationwide shipping of its products.

Weighing in at over 22,000 pounds, the Force 5000 features a cast iron, split bridge design, heavy-duty stands, direct drive, 25-hp motor, touch-screen controls and an oversized, tilting 7x12 foot concrete table with pneumatic brakes.

For more information, visit www.superiorstoneproducts.com.

Stone-Machinery.com Features World's First Mobile Slab Cutting Saw

Stone-machinery.com is now featuring the world's first mobile slab cutting saw, which is manufactured in the U.S. by Forza. Set-up time for the saw is 15 minutes, and the saw is easy to transport to the shop or a job site.

According to Stone-machinery.com, the saw is affordable for a small shop wanting to transition from a rail saw to bridge saw, with the advantage of no downtime and no costly foundation work if you outgrow your shop or change shop layout. It is also great for a large shop that does onsite work.

The mobile bridge saw features a self-contained water recycling system, integrated hydraulic tilt table, X-axis cutting length of 116 inches, Y-axis cutting width of 70 inches and a variable speed control joystick operation. Additionally, the saw is towable with a 1/2-ton vehicle, and contains a 220V single-phase 10-hp Italian cutting motor, laser alignment guide and more.

Eleventh Annual Southwest Stone Carving Workshop

The Southwest Stone Carving Association presents the 11th annual Southwest Stone Carving Workshop in Jamez Springs, N.M., Sept. 17-24. All experience levels, from beginner to novice, are welcome to attend.

The workshops will cover a variety of topics, from basic stone carving techniques to advanced carving and monumental sculpture. With a professional faculty on hand, the workshops provide individual attention and comprehensive training in stone and tool selection, safety issues, setting up work space, techniques for carving various types of stone and finishing a sculpture.

Classes include: Roughing Out, Stone Carving Techniques, Carving the Human Figure, Carving the Human Face, Sculpture Finishing Techniques, Mounting a Finished Sculpture and Gas-Powered Chainsaws.

Tuition for the seven-day event is $800, which includes workshops, two cubic feet of limestone or one cubic foot of alabaster, compressed air, hoses, electricity and workspace. Room and board is an additional $400 and includes three meals per day and on-site lodging.

For more information and to register, visit www.swstonecarving.org, e-mail info@swstonecarving.org, or call (877) 683-3097.

Industry News

Vinci Stone Products Nears Completion of Historic Butler Stone Quarry

Vinci Stone Products Inc., a 48-year-old company based in Marriotsville, Md., is completing the renovation and restoration of the historic 25-acre Butler Quarry, which it acquired in 2005.

Mined since the early 1800s, architects, builders and homeowners select the quarry's gneiss stone for its warm and distinctive silver-grey-brown appearance. Traditional and modern commercial projects use the stone because it fulfills specification requirements for any project, or design and blends with natural landscapes and sceneries. Demand for the stone's strength and versatility has also enabled the company to increase its use.

According to A.J. Vinci, president of Vince Stone Products, the company has added several new state-of-the art machines and equipment at Butler Quarry to improve the stone's consistency, quality and production. Additionally, the new equipment enables the company to produce a natural thin stone veneer, which offers a more appealing and cost saving alternative to man-made veneers.

The acquisition of Butler Stone Quarry, complements the company's other quarries, the original Vinci Quarry in Randallstown, Maryland and the Piccirilli Quarry in Marriottsville, Maryland.

2006 Stonework Symposium

The sixth annual gathering of the Stone Foundation, a society of stonemasons and others involved with and interested in stone, stonework and stone art, will be held in Hood River, Ore., Sept. 28-Oct. 1. The symposium will feature informative presentations, active demonstrations and inspired discourse and camaraderie.

Symposium topics will include: stonemasonry, dry stone masonry, sculptural stonework, stone in the landscape, restoration masonry and architectural stonework.

For more information and to register, visit www.stonefoundation.org. ◆

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