

QUARRA STONE: RESTORING TRADITIONS



WHEN THE TIME CAME TO ADD A VISITORS' CENTER TO THE U.S. CAPITOL, ARCHITECTS WANTED TO MATCH THE CREAMY-GOLD COLORED SANDSTONE ORIGINALLY USED IN THE GRAND ROTUNDA OF 1824. THEY ALSO WANTED HAND-CARVED BRACKETS AND COLUMNS LIKE THOSE FOUND IN THE ORIGINAL BUILDING, BUT FINDING SOMEONE WHO COULD CREATE FEATURES LIKE THOSE BUILT 200 YEARS AGO WASN'T EASY.

The company that got the job was Quarra Stone, located in Madison, Wisconsin, which provided the Brickle Gold sandstone for the project, as well as carvers for the intricate work.

Quarra Stone specializes in this kind of project. Started in 1989 by Jim Durham out of his love of elaborate cut stone, Quarra fabricates and supplies architectural and interior stone for building projects throughout the United States. Some of the buildings are new, but many are historical renovations or new buildings matching historical ones. This has meant investing in technologically advanced equipment, simple hand tools, and the expertise to use them.

"It's a collaboration between technology and Old World craftsmanship," said John Rodell, executive vice president at Quarra.

by Liz McGeachy

PHOTOS COURTESY QUARRA STONE



Above: German master carver Frank Haufe, who was educated at the world famous Wunsiedel Training Center for Masonry and Sculpture in Germany, trains, directs and mentors Quarra's nationally recognized handcarving team. Mr. Haufe also works on some of Quarra Stone's most challenging stone carving projects like the five year-long, showcase restoration of the historic Kansas State Capitol building where he is sensitively refurbishing the signature Corinthian column capitals, utilizing locally quarried stone.

Below: Frank's well-used, traditional mason's tools.



IN THIS ISSUE

We present a profile of Quarra Stone, internationally known for excellence in stone restoration and new structural construction.

Kevin Padden gives us some pointers on job-inspection forensics, and choosing diamond pads.

Buddy Rhodes seminar hosted by Braxton-Bragg gets a review.

Aaron Crowley presents an interesting concept for everyone that delegates tasks.

The Stone Detective takes on damage inspection after a flood.

Other Quarra projects include the U.S. Supreme Court Visitor Center, Yale Bass Library, and the Wisconsin Institutes of Discovery. Quarra is in the middle of a five-year restoration of the Kansas State Capitol, using a team of more than twelve master carvers working on hundreds of ornate medallions, decorative elements, and Corinthian columns using locally quarried limestone.

The extensive use of hand-carvers makes Quarra unique. Early in the development of the business, Durham knew that quality hand-carving would be important for the projects they were undertaking. In the 1990s he established a partnership with the Wunsiedel Training Center for Masonry and Stone Sculpture in Germany, bringing its technical director to Wisconsin to train the Quarra carvers. They also regularly host master

stone-carvers from Wunsiedel as artists in residence – artists like Anne Tempelmann, a German master carver who worked in Switzerland, Germany, Ireland, and Nicaragua as part of her journeyman apprenticeship, who was with Quarra for five years.

Today, 20 of Quarra's approximately 50 employees are hand-carvers. They work in two shifts at the plant, which includes work stations designed specifically for carving and handling large pieces of stone. Some of the carvers have been working at Quarra for more than fifteen years; some are just beginning the process. Many of the new carvers are college graduates and 3-D artists from all over the world.

Continued on Page 2

QUARRA STONE: RESTORING TRADITIONS

Continued from page 1

“It’s a very international group,” said Rodell. “The Stone Carving Studio really is a little United Nations – Germany, South America, Ukraine, Romania – men and women representing all skill levels, from master carver to apprentice.”

These carvers use tools that have been around for centuries, but Quarra also puts the latest technology to work. For instance, a 3-D scanner guides architectural projects from the concept stage to mock-ups and models to production. And Quarra can scan a piece of stonework that’s been damaged and use the technology to create a design to match the original piece.

Its 36,000-square-foot facility contains the latest CNC sawing, milling, and finishing equipment. Its computer-run blocksaw is large enough to cut an SUV in half, and the six-axis robotic milling machine roughs out hand-carved pieces before more intricate work is done. Instead of a saw blade, this machine uses several diamond-tipped router bits.

The balance between the use of technology and hand-craftsmanship works well for Quarra.

“Equipment is important but it only goes so far,” said Rodell. “A lot of it boils down to the individual hand-tooling. Our customers want and expect a high level of detail.”

Of course the whole process starts with the stone. There are thousands of types of stone found throughout the world, varying in color, texture, and strength. Finding just the right one for a project is one reason Durham got into this business.

“I found I was most interested in architectural cut stone, and the more elaborate the better, as well as the variety and type of stone,” he said.

Durham travels the world looking for new types of stone. In some cases, Quarra is the exclusive North American provider of stone. For instance, Quarra has a partnership with Truffer AG in Switzerland to distribute their high-end designer stone Valser Quartzite in North America.

Finding the right stone for a project proves especially tricky in historical restoration. In these cases, Quarra tries to return to the original quarry that provided the stone. Some of those sites have long since closed.

“It’s interesting and fun to try and find the original stone, even if it means wading through weeds and mosquitoes to find stone in a farmer’s field, but the main reason we do it is to be accurate,” said Durham.

They may not always find the original quarry, but their research allows them to get the best possible match. Recently one of Quarra’s clients needed Tennessee Pink Marble for a project. By visiting quarries in Tennessee, reading up on the literature, and doing other research, Quarra found just the right match for the project.

Quarra has built a database of more than 300 dimensional stone quarries throughout North America. Last year, Quarra got the help of several business school interns to combine information from the Internet, Google Earth, maps, interviews, and Quarra’s archives to organize a usable database for use by Quarra clients. It enables architects who specify natural stone in their projects to earn points toward LEED certification.



Above: John Rodell, Executive Vice President Above, right: Jim Durham, Founder and President of Quarra Stone



LEED (Leadership in Energy and Environmental Design) is a national certification program for the design, construction, and operation of sustainable, green buildings. Current guidelines allow the award of one point toward LEED certification for builders who use dimensional stone quarried within 500 miles of construction. Quarra’s clients can use the database to find exactly what type of stone is available within 500 miles. This dramatically reduces shipping costs, which can make up as much as 20 percent of a project’s costs.

“Natural stone is an inherently earth-friendly building product,” said Durham, adding that the quarry database will now allow their clients more options in providing sustainable building. *Continued on page 3*



Above, top right: There’s nothing like having the right tool for the job. When several exact duplicates are required, the six-axis Kuka 500 Robot delivers with precision for Quarra.

Above: The Book of Knowledge, Yale University Bass Library (detail, Gothic Pavilion) Below, left: Jura Limestone facade, Williams College 1962 Center for Theatre and Dance by William Rawn Below, right: United States Capitol Visitor’s Center, Washington, D.C.





Above: Quarra Stone has over 20 carvers on staff working in two shifts at the plant, which includes work stations designed specifically for carving and handling large pieces of stone. Here, two carvers use pneumatic tools to rough out a limestone tracery piece.

Below, left: Part of the Immense limestone block inventory at Quarra's stone yards.

Below, right: Prussiani Super 5 CNC machine at work on project producing high-relief ideograms for a building facade.



Above: Automated Hensel 567 saw works its way through a 6-foot block.

Natural stone may be growing in popularity in some new projects, but it's been around since building began. As some of the United States' most prominent buildings get older, there is a need for skilled crafters to maintain them – people who understand not only the characteristics of stone, but its meaning and our emotional connection to it.

“Stone has always been a big part of our culture and our history and I think it will continue to be an important resource,” said Rodell. “Helping recreate history is amazing. It really does put a lump in your throat.”

For more information about Quarra Stone, their projects, and the scope of services they can provide, please visit their website www.quarrastone.com

