

The World of Masonry Masonry CONSTRUCTION

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JANUARY 2011

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Masonry**

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**Saving Masons'
Aching Backs**

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WORLD OF MASONRY:

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Las Vegas**

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The World of Masonry

Masonry

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MC Online

Visit www.masonryconstruction.com for web exclusive features, including more on **MC's Leader of the Year, Tom Daniel**. Part two of this month's **Troubleshooting** question on wall ties is also online. And don't forget to sign up for the free **Masonry Construction Update newsletter**. For the most recent **World of Masonry/World of Concrete** details, check www.worldofconcrete.com.

Cover: The U.S. Marine Corps has adopted the modern, comfortable design of P-015 BEQ, Horno 53 Area at Camp Pendleton, Calif., for all of its new bachelor enlisted quarters. Photo: Pablo Mason Photography


Lightweight Block, Heavyweight Benefits

Lightweight concrete masonry units save half the labor.

Four newly constructed warehouses at the Maryland Science Center in Baltimore are almost move-in ready, and two more are in progress. Built by St. John Properties, the buildings provide the center with a distinct advantage, both in construction method and in time, labor, and materials.

The project, started in March, called for six new warehouse buildings to be constructed 300 yards from existing buildings. The warehouses were to be rented out for storage to a high-profile tenant with a strict timeline. The buildings had to go up quickly.

Knowing that constructing such a large project so quickly would come with its share of budget concerns, the contractor turned to Ernest Maier Inc., a local block, masonry, and hardscaping supply company, for a solution. As a manufacturer of normal-weight masonry units, Ernest Maier had already



Construction of one of the four warehouses is complete. By handling 24-inch-long units, which weigh the same as the 16-inch-long versions, the mason gained 50% more wall area by placing the same number of units at the same pace of labor.

worked with Big River Industries Inc., a large producer of expanded clay lightweight aggregate, to develop a lightweight masonry unit called E-Lite (or extra-light), for other time-sensitive projects.

Brendan Quinn, CEO and president of Ernest Maier, knew that lightweight masonry block would fill the need for a fast turnaround, while staying within budget. The units contain Big River Industries' expanded clay lightweight aggregate, which makes them lighter and ultimately reduces labor and construction time. "Lightweight block increases productivity even at the same labor pace, and workers are typically more efficient because the lighter block is less work intensive," Quinn says.

Get in, get out

As a result, the contractor used E-Lite 24-inch-long lightweight CMUs supplied from Ernest Maier in place of the standard weight, 16-inch gray units. In doing so, he reduced construction

time and labor on this part of the project by 50%. In all, 6600 24-inch-long lightweight units were used for the straight walls and corridors of each of the four 75,000-square-foot buildings. The mason, Mike Campitelli of Mid Atlantic Masonry in Reisterstown, Md., also used several 12-inch lightweight units and a variety of normal weight material for other applications on the job.

The mason benefited from using this alternative in several ways. In addition to getting paid by the square foot, he made money by completing the job faster. The crew also avoided common injuries associated with heavier block.

These are the key benefits of using lightweight masonry units, especially in large jobs like warehouse construction. "The lightweight factor helps contractors complete projects sooner so they can generate revenue from the projects earlier, which is better for the property owners as well," says Jeff Speck, vice president

In addition to getting paid by the square foot, the mason also made money by completing the job faster.

of sales and marketing at Big River Industries. "If property owners can reduce the number of days it takes to construct a building, it helps them project when it can be rented and begin earning revenue."

Making lightweight units lighter

The E-Lite units used for the buildings contain 60% Livlite and 28% natural aggregates; the remainder is cement and water. The finest gradation of expanded clay lightweight aggregate (LWA), Livlite qualifies as a reclaimed material, which benefits contractors applying for LEED (Leadership in Energy and Environmental Design) credits.

Photos by Big River Industries/Ernest Maier



Lightweight masonry units allowed the six new warehouses at the Maryland Science Center in Baltimore to be built quickly and with less labor and weight.



Together with its sister companies, Parker Block in Delaware and Skyline Brick in Virginia, Bladensburg, Md.-based Ernest Maier produces 9.5 million units annually, ranging from standard weight to extra light. Most of its products contain Livlite, produced at Big River's Livingston, Ala. location.

The quality of expanded clay LWA results from a carefully controlled manufacturing process. In a rotary kiln, selectively mined clay is fired in excess of 2000° F. The clay expands, cools, and is then processed to specified grading. The result is a high-quality, lightweight aggregate that is inert, durable, tough, stable, highly insulating, and free-draining.

Familiar with the process by studying Big River's Q-Lite units, Ernest Maier developed its E-Lite block to provide customers with a unique approach to time-, labor-, and cost-savings. "The lightweight units have better thermal properties, saving property owners money on heating and cooling," Speck says. "Also, they have superior fire resistance, providing more structural stability, which is an improvement over regular weight material. And they're safer to handle."

Productivity is critical

Despite the benefits of using lightweight block, the budget and bottom line rule most construction projects. "Even though it makes complete sense to use a lighter weight option, it is tough to persuade some architects and contractors to do it because of the upfront price tag," Quinn says. "But, the savings is realized in the end."

In masonry construction, the cost of labor has exploded, with prevailing wages in the \$13 per hour range and up. Inflation has deterred contractors from spending more for materials.

"With labor costing at least 50% of many masonry unit projects, the 50% labor savings attainable by using 24-inch-long lightweight units will more than pay for the additional upfront product cost," Quinn says. "Block accounts for only 10% of what makes up many masonry contracts. If you



E-Lite lightweight masonry units are comprised of 60% Livlite, 28% natural aggregates, and 12% cement and water. Livlite qualifies as a reclaimed material in applying for LEED credits.

have a \$2 million project, the cost of the block could be approximately \$200,000. Labor makes up half of the costs. If you can take a variable cost like that and improve it, the overall cost of the project will go down."

In this case, the mason was handling 24-inch-long units, which weigh the equivalent of 16-inch-long normal weight units. He gained 50% more wall area by placing the same number of units at the same labor pace. To assist in pre-planning the upfront product costs versus return on investment, Quinn provided spreadsheets to the project planners, providing details on the costs and savings they would realize by using the lightweight alternative. From there, he worked with the project team to keep costs within budget.

Learning not taken lightly

Though the technical components of using lightweight block are easier because it weighs less, the longer, 24-inch units did cause a slight learning curve for the mason. The cores of the units are larger and, because they are longer, filling the cores requires more grout. Thus, the mason had to come up with a way to reduce the grout volume.

Ernest Maier is in the process of building classrooms at its Maryland facility to educate architects and contractors about lightweight concrete masonry. This will include masonry techniques for lightweight block, such as grouting for larger-sized units and other topics.

One reason Ernest Maier's E-Lite block was chosen in the Maryland Science Center project was for its familiarity with the masonry industry and needs in the area. The business also recently earned one of the highest honors with a visit from President Barack Obama, who was touring manufacturers' facilities in October to generate interest in the rebounding construction industry.

Safety and savings

In addition to the 50% labor savings the lightweight units can provide, they also take safety programs and corporate accountability to another level. "Using lightweight block is a long-term investment in the ethical treatment of employees," Big River's Speck says.

By thinking in terms of money that can be saved with fewer back injuries and workers' compensation claims, contractors can significantly reduce

Safety for Masons

Lightweight block is just one method of increasing safety measures for masons at jobsites.

Researchers have found that while products, equipment, and work practices are already in use by masonry contractors to reduce the rate of musculoskeletal disorders, the decentralized nature of the industry and prevalence of small contractors has led to regional differences in their use and barriers to widespread adoption.

These findings are significant because bricklayers have the highest rate of back injuries with time away from work. Mason tenders have the highest rate of overextension injuries in construction.

This is according to "Ergonomic Best Practices in Masonry: Regional Differences, Benefits, Barriers, and Recommendations for Dissemination," a study published in the *Journal of Occupational and Environmental Hygiene*.

"It is not uncommon for a bricklayer to handle 200 concrete masonry units per day, and they each weigh 38 pounds or more," says Jennifer Hess, PhD, the lead author of the study. "Bricklayers and masonry tenders perform physically demanding work, day after day."

For more details, visit www.cpwr.com/abstracts/2004-2009_shecker.htm.

other costs. "A contractor once told me that one back injury costs his company more money than the difference in price of normal weight block versus lightweight block," says Speck. "That savings would buy lightweight block for two years."

When it comes to initial product selections, preliminary costs, and the possible eventual outcomes surrounding masonry projects such as this one, thinking long-term might very well yield the highest level of profitability. **mc**

To learn more, contact Ernest Maier at 301-927-8300 or gozero@emcoblock.com. Visit www.bigriverind.com for information about Big River Industries and Q-Lite.

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