

CASE STUDY: OZONE ACTION CITY

What do you call 4,560m square of games, rides and activities? In Eau Claire, Wisconsin, you call it Ozone Action City, a mammoth indoor amusement park that features go karts, a rock climbing wall, laser tag, bumper cars and hundreds of arcade video games.



Ozone Action City in Eau Claire, WI, is a 50,000 square foot indoor amusement park.

All the action is contained in an enormous steel structure that has been made more attractive with the addition of exterior veneer of split face concrete masonry units (CMUs). Business owner and general contractor Mark Stiel used over 13,000 CMUs on the project, and secured them with ITW TACC's Mason Bond masonry adhesive.

"The original estimate from a local mason contractor using mortar for the job was for \$90,000," says Stiel. "But after reading about Mason Bond™ in The Journal of Light Construction I decided it would be a better alternative." As a result, Stiel cut the cost of the masonry project by over one-third, coming in under \$60,000.

"We were able to achieve such savings by using Mason Bond instead of mortar," according to Stiel, primarily because Mason Bond is easier to apply than mortar and does not require mixing, resulting in a 50% improvement in worker productivity.

Although the first course of blocks was set in mortar (due to an uneven foundation), the remaining CMUs were all set using Mason Bond. Stiel notes that a single worker installed over 450 blocks in one day – with no assistance. The worker simply applied a bead of Mason Bond onto the horizontal and vertical surfaces of the block, set the block and moved on to the next one.

Will Ozone Action City's mason block façade stand up to the tough Wisconsin winters? Tests conducted by the National Concrete Masonry Association (NCMA) found that freeze/thaw resulted in minimal degradation to the bond strength of Mason Bond. The tests also found that walls built with Mason Bond were five times stronger than walls built with mortar. Mason Bond is also easy to apply in all weather conditions, and cures quickly. That means your project - no matter how large or small - will stay on schedule.



After seating the first course on a mortar bed, Mason Bond™ was used to secure the remaining 13,000 concrete masonry blocks.

Mark Stiel, who has since been contracted to build an ice arena adjacent to Ozone Action City, says "I will definitely use Mason Bond on that project!"



Owners cut over one-third off the cost - over \$30,000 - by using Mason Bond™ adhesive instead of mortar on the Ozone Action City project.

PROJECT SPECIFICATIONS: OZONE ACTION CITY

- 50,000 sq. ft. steel building with split face masonry facing
- Over 13,000 concrete masonry units (8" x 4" x 16")
- Installation of up to 450 CMUs per day, per person.
- Total savings over traditional mortar installation: \$30,000.

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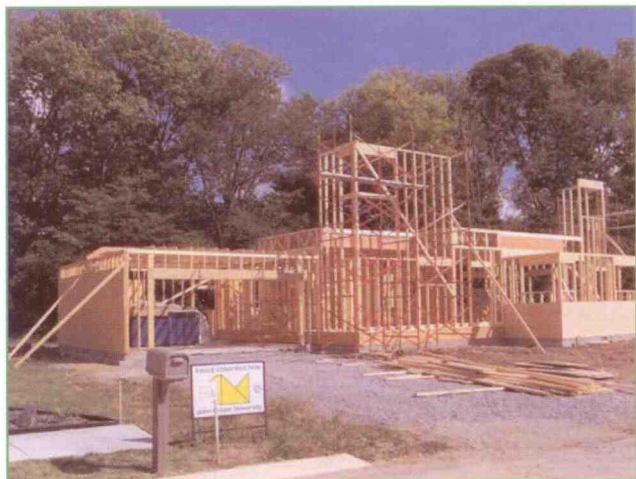
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CASE STUDY: JOHN BROWN UNIVERSITY

Schoolbooks give way to concrete masonry blocks for students in the Construction Management degree program at John Brown University in Siloam Springs, Arkansas. Each year the class project involves the construction of a house in the Siloam Springs community.



John Brown University construction management students built this home in Siloam Springs, Arkansas.

In the fall semester of 2005, Jim Caldwell, Professor of Construction at John Brown University, made the decision to use Mason Bond instead of mortar for the construction of the concrete masonry unit (CMU) crawl space on the project house.

Despite having no masonry experience, the 30 students in the class were able to lay 700 blocks in less than five hours. Using a "floating footing" technique similar to a poured patio, the student workers were able to adhere the first course of blocks directly to the footing with

Mason Bond – no need for a mortar bed.

From that point, students merely applied a bead of Mason Bond onto the horizontal and vertical surfaces of each block, set the block and moved on to the next CMU. The walls went up quickly, easily and – according to tests conducted by the National Concrete Masonry Association (NCMA) - up to five times stronger than walls build with mortar. And because Mason Bond does not require mixing, it is easier to apply than mortar, resulting in a 50% improvement in worker productivity.



CMUs were adhered directly to a floating foundation using Mason Bond™ from ITW TACC.

According to Professor Caldwell, "Mason Bond is an excellent product for block crawl space foundations. The holding power is remarkable. We were able to backfill the wall the next day without any fear of cracks developing."

Will Mason Bond be going back to school soon? "We will definitely use Mason Bond again," says Professor Caldwell. Class dismissed.



Despite having no masonry experience, students were able to lay over 700 blocks in just five hours of class time, and were able to backfill the walls the very next day!

PROJECT SPECIFICATIONS: JOHN BROWN UNIVERSITY PROJECT HOUSE

- Construction management class project involving 30 students
- Used over 700 concrete masonry units (CMUs) in crawl space
- First course laid directly onto floating floor foundation using Mason Bond™
- No experience necessary to use Mason Bond™ successfully!

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CASE STUDY: NORTH STAR LANDSCAPE DESIGN & INSTALLATION



A rain storm washed some of the top soil down the slope, but the retaining wall built with Mason Bond™ stayed in place.

Darren Williamson, president of North Star Landscape Design & Installation in Cassopolis, Michigan, specializes in creating innovative "hardscape" projects. ITW TACC's Mason Bond masonry and landscape adhesive plays an important role in his projects.

"Much of the block we install doesn't require adhesive because the blocks interlock," says Williamson. "However, over time, as the ground behind a wall moves and shifts, we have problems in corners and radius areas of retaining walls. The blocks start to separate and push out." Now Williamson's crews apply Mason Bond to the blocks in these areas and its superior strength holds the block in place.

stronger than mortar, and that Mason Bond demonstrates superior cold weather performance (see sidebar).

Retaining wall caps and stairways are other areas where North Star uses Mason Bond. The product cures quicker than other adhesives, reaching 80% of its final strength within 24 hours. This allows finished areas to be accessed by the public much earlier.

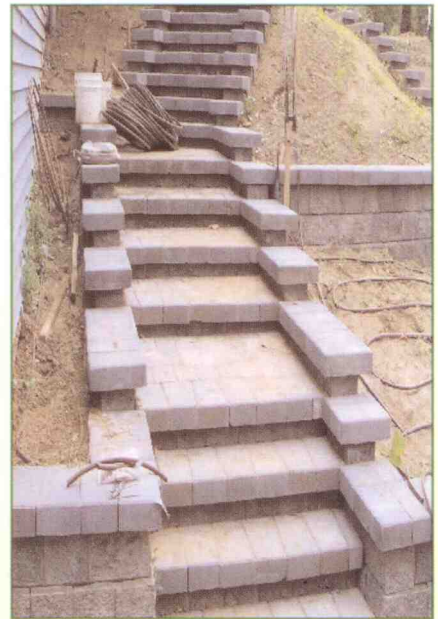
TESTING PROVES MASON BOND'S SUPERIOR STRENGTH

The independent National Concrete Masonry Association conducted a series of field test (to ASTM E72-95 specifications) and concluded that walls built with ITW TACC's Mason Bond were five times stronger than walls built with mortar.

In addition, the NCMA put Mason Bond through a series of freeze/thaw tests (ASTM C 1072) to simulate field conditions in geographic areas prone to freezing. The test data showed no significant degradation in bond strength for specimens exposed to daily temperature cycles.

"With other adhesives, we would be concerned about leaving the job site because we were never sure if the adhesive would be strong enough to hold the caps in place. But with Mason Bond, by the time we clean and pack up on the job site, the bond on the caps is strong enough that you can't move them," said Williamson.

Williamson notes that the yield from a tube of Mason Bond will cover approximately three times as many blocks than a tube of other adhesives. Mason Bond can also be used on wet and cold block, effectively increasing employee productivity and extending the construction season.



Stairways built with Mason Bond™ can be put into service soon after installation.

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CASE STUDY: MANUFACTURED HOME



The manufactured housing market in America is an important part of the overall construction industry and using ITW TACC's Mason Bond® to install concrete masonry units offers an affordable option for foundation skirting that is fast and easy to install.

Jess Spradlin Midwest Homes (Pittsfield, IL), one of the premiere MH dealers and installers in the region, was looking for an alternative

to traditional vinyl skirting that gave the appearance of a permanent foundation but was easy to install and cost competitive with higher end vinyl product. They contacted Mason Bond distributor, Midwest Block and Brick in Columbia, MO, who proposed using concrete and Mason Bond masonry adhesive for the skirting around their Holly Park office model.

PROJECT SPECIFICATIONS: BLOCK SKIRTING

The first course consisted of 54 standard (8"x8"x16") gray concrete masonry units (CMUs) set on a gravel base for leveling. The blocks were glued together using Mason Bond on the head joint (vertical surface). An additional three courses were installed using solid, split face (4"x8"x16") architectural blocks. Mason Bond was applied the horizontal and vertical joints following the manufacturer's instructions. A total of nine 10.3 oz. tubes of Mason Bond were used.

WEATHER: NO PROBLEM

Weather conditions at the time of installation were 40°F with rain and drizzle. Despite the blocks being damp from exposure to the elements, there was no problem using Mason Bond™ to secure the blocks. Mason Bond can be used in a broader range of weather conditions, such as cold and wet weather that would normally slow or even delay the same job using mortar.

A two-man crew installed a total of 236 blocks around the base of the home in just three hours – including set-up and site clean up. Compare that to the typical two-man masonry crew that averages only 180 blocks in 8 hours using mortar. Using Mason Bond does not require premixing, troweling or special equipment - just a simple tube application and easy clean up.

Due to greatly improved productivity and ease of application, project officials estimate the overall cost of installation was less than half than the cost of using mortar.

The project's success has led Jess Spradlin Midwest Homes to offer the Mason Bond assembled block skirting as an upgrade feature on their manufactured homes.

"This is so easy that we can use our existing installation crew to install the block skirting without hiring a dedicated masonry crew," said Bill Oxley of Spradlin Midwest Homes. "It's something our customers will really like and will also find affordable."



Mason Bond® was applied to vertical and horizontal surfaces of the base course.



The finished skirting includes split-face architectural blocks adhered with ITW TACC's Mason Bond®.



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CASE STUDY: RESIDENTIAL CONSTRUCTION - SEAMAN PROJECT

Louis Seaman does things right. He is meticulous in his work, and meticulous when working around his house in Bernardsville, New Jersey. Two recent projects are proof that Louis knows what he is doing.



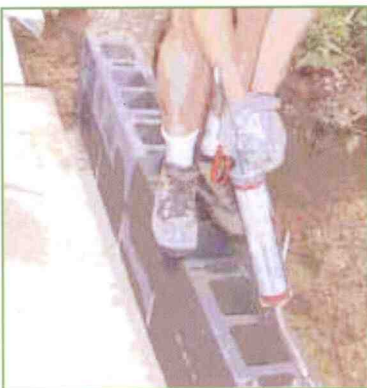
Mason Bond™ applied to vertical surface of the masonry block before it is set in place.

In planning to extend the foundation of his house for an addition and build two entry pillars at the end of his driveway, Louis selected the best materials available. After reading about ITW TACC's Mason Bond adhesive in *The Journal of Light Construction*, Louis decided to use Mason Bond instead of mortar.

"I have done some masonry work in the past using mortar and it was a slow process," Louis said. "It takes time to mix the mortar, move it into position and trowel it on the block." That is not the case with Mason Bond.

Mason Bond is made from a patented, high-strength polyurethane adhesive that offers simplicity of application with superior strength. Mason Bond requires no sand, gravel or mixing. Simply apply a bead of Mason Bond onto the horizontal and vertical surfaces of the block. Set the block and move on to the next.

Mason Bond also delivers superior strength. Tests conducted by the National Concrete Masonry Association (NCMA) found that walls built with Mason Bond were five times stronger than walls built with mortar.



Mason Bond™ is applied to the top of the prior course, then the next course is simply stacked on top. The first course was set directly on the footing. It set quickly enough to allow Louis to stand on the course.

Mason Bond goes on easy in all weather conditions, then bonds quickly and durably. That means your project - no matter how large or small - will stay on schedule.

"Mason Bond was easy to use," according to Louis. "It cut my labor time in half because all I had to do was apply a bead and stack the block. It was a great fit for my project."



A finished pillar. Louis Seaman completed two pillars in just 57 minutes!

PROJECT SPECIFICATIONS: DRIVEWAY PILLARS

Each pillar was 8 courses high, with 4 CMUs per course, for a total of 64 CMUs for the two pillars. Adhesive was applied to the vertical surface of the CMUs, and then to the bottom of the CMUs in the first course (placed on a poured footing). For subsequent courses, adhesive was applied directly on the top of each block and the next course was set in place. Total construction time: 54 minutes.

PROJECT SPECIFICATIONS: FOUNDATION EXTENSION

Four courses of CMUs were added to a poured footing, each containing 7-1/2 CMUs. Two beads of MasonBond were applied to one side of the vertical surface of each block, and to the bottom of the first course. Total construction time to build the foundation: 1 hour, 10 minutes.

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