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REPRINT | CONCRETE PRODUCTS & CAST STONE

Hollow-Core Precast Modular Blocks  
Help Manufacturers Cut Raw Material  
and Freight Costs

**REDI-ROCK®**



REPRINT  
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Redi-Rock International, Charlevoix, MI 49720, USA

# Hollow-Core Precast Modular Blocks Help Manufacturers Cut Raw Material and Freight Costs

**As the cost of cement, sand, gravel, and freight continue to rise around the globe, concrete product manufacturers are searching for ways to maintain their profit margins while providing in-demand products. For some concrete product manufacturers, the solution to rising concrete costs is actually taking concrete out of their products.**

## Rising Costs Spur Innovation

"We've been looking for lighter blocks to help us stay competitive as the cost of cement, rock, and trucking has been going up," explained Irvin Vittitow, co-owner of Redi-Rock K.I.T.

Vittitow's business manufactures and installs Redi-Rock precast modular blocks for retaining walls in the Kentucky, Indiana, and Tennessee region in the United States. Annually, Redi-Rock K.I.T. produces and sells upwards of 9,300 m<sup>2</sup> (100,000 square feet) of Redi-Rock blocks and is always trying to optimize the cost, design, and delivery of its products to maximize profits.

Redi-Rock K.I.T. became a licensor of the Redi-Rock retaining wall system in 2006 and has seen growth year after year. "We were up almost 10% last year, and 8% the year before that," Vittitow said. Though business has been good, Vittitow wanted to see the product line continue to evolve. "Our biggest cost is concrete. If we want to be competitive, we have to take weight out of the blocks," he explained.

Listening to the requests from licensed manufacturers like Vittitow, Redi-Rock International's team of engineers began working to cut weight from the most used Redi-Rock block - the 41" (1030mm) solid block. The result of a year of design and testing is the 41" Hollow-Core block. Manufactured in a Redi-Rock standard 41" steel form, these hollow core blocks are created with steel inserts bolted into the form to create the hollow core. In addition to cutting 28% of the raw material, switching to a hollow core also allows manufacturers to cut 25% of the shipping costs and also lower emissions associated with delivery. The inserts are installed into manufacturers' existing forms in 2-3 hours, and the manufacturing process requires no rebar or reinforcement within the blocks.



*Irvin Vittitow, co-owner of Redi-Rock K.I.T. has used hollow core products to stay competitive in spite of rising raw material and freight costs.*



*While inventory is a huge cost for concrete manufacturers, hollow-core products minimize the amount of capital tied up in inventory.*





*With rising freight costs, it's necessary to be able to fit more blocks on a truck for delivery to job sites.*

"When the 41" Hollow-Core block came out a few months ago, it was a clear decision for us because it allowed us to cut over a quarter of our concrete costs," Vittitow said. "On our first 41" Hollow-Core job we're working on now, we're saving enough to pay for the cost of the inserts, and we're shipping the blocks farther than a typical job. It also helps us keep inventory costs down; less concrete in a block equals less money tied up in my yard. We're casting twice a day and we can't keep up with the demand for this block," Vittitow said.

### How Hollow-Core Blocks Are Produced

The typical manufacturing process for Redi-Rock retaining wall blocks requires several man hours per day and a space of 33 feet (10 m) by 55 feet (17 m) for a typical manufacturer in the first year of manufacturing product and building the

market. At the beginning of a shift, blocks that were cast the previous day are stripped from the forms and moved into inventory to fully cure. Then the forms are cleaned and sprayed with a release agent before pouring again. The concrete cures in the forms, the block is stripped - and the cycle repeats. With a typical starter package of 12 retaining forms, 2 freestanding forms, and 1 step/cap form, a manufacturer can produce 4,500 blocks a year with 100 days of single pouring and 100 days of double pouring. Some manufacturers even triple pour their forms in multiple shifts to maximize output.

"After evaluating our production numbers and material costs, the Hollow-Core inserts were a no brainer. They have a positive, long term impact on the entire production process and allow us to be even more competitive," explained Adam Rehtin, General Manager of Redi-Rock Structures of OKI in Cincinnati, Ohio, United States.





*With the Redi-Rock forming system, no sophisticated equipment is necessary even for the largest of blocks. Forms can be poured using a Redi-Mix truck and demolded and inventoried using a forklift and hoists.*



*The Redi-Rock 41" Hollow-Core block removes 28% of the concrete as compared with a standard Redi-Rock block, reducing raw material and freight costs.*

Redi-Rock Structures of OKI has manufactured retaining wall blocks since 2003. Born out of a general contracting business that saw retaining walls on over 80% of the projects it worked on, the company decided to become a Redi-Rock manufacturer so it could benefit from all the retaining wall work happening in the area. "We have experienced continued growth," President Tim Turton has said of the business.

### How The Market Responds to Hollow Core Products

Removing concrete from a product could give specifiers and consumers pause, but the market response has been positive because the benefits of the 41" Hollow-Core blocks aren't just for manufacturers. "With the 41-inch (1,004 mm) Hollow-Core block, you basically get all the structural advantages of the 41-inch solid block, with less weight," explained Clint Hines, PE and President of J.C. Hines and Associates. Hines has worked on hollow core projects with Redi-Rock K.I.T. and Redi-Rock of OKI and is excited about the opportunities it provides for optimizing walls. For engineers, helping a project owner save costs by optimizing the wall design provides a major benefit. And removing raw material and optimizing shipping to reduce the carbon impact on a project is becoming increasingly important in many parts of the world.

41" Solid and 41" Hollow-Core blocks are used to build gravity retaining walls that require no soil reinforcement. With blocks weighing 2,240 pounds (1,020 kg) and 1,620 pounds (735 kg) respectively, these retaining walls typically require no soil reinforcement up to 10 feet (3 m) or more. 41" Hollow-

Core blocks are compatible with all other Redi-Rock blocks, making it a simple element to include when optimizing a wall with other blocks from the integrated Redi-Rock system of solutions.

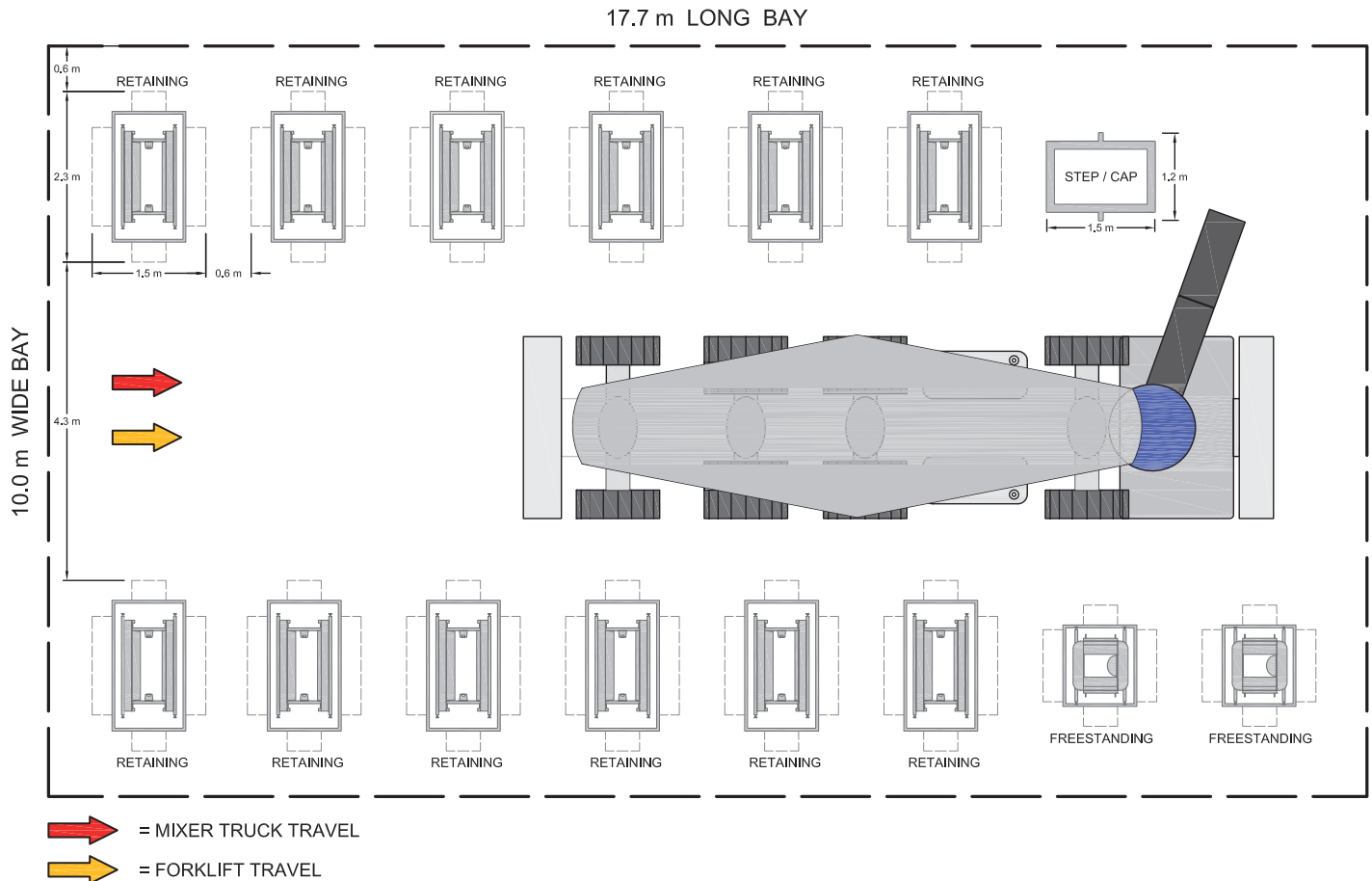
### Options To Cut More Concrete

Since 2016, Redi-Rock has introduced two other hollow core products to help concrete manufacturers diversify their product mix and bolster growth - in spite of the rising cost of cement and other raw materials. Like 41" Hollow Core, these products also reduce the amount of concrete required while cutting shipping costs and carbon emissions from manufacturing and shipping.

Redi-Rock XL launched in 2018 to make it possible to build even taller gravity walls in tighter spaces. These massive blocks are 52, 72, or 96 inches (1,320, 1,820, and 2,440 mm) wide and 36 inches (914 mm) tall, allowing installers double their face coverage with each block installed as compared to standard 18 inch (500 mm) tall Redi-Rock blocks. "XL is really taking off; it will make up about 12% of my total block sales this year," Vittitow said.

Because XL is such a large product, the steel forms have a different configuration than smaller Redi-Rock products. The Redi-Rock XL form consists of a base frame with wheeled, modular doors to create the upper and lower face of the blocks. Each door rolls along the floor between open and closed form positions, while mating to the stationary base





*Manufacturers of precast modular blocks have flexibility in setting up their plant to optimize production efficiency. This is one typical layout.*

frame. This form design provides safe and predictable motion during operation. A reinforcement cage is required within XL blocks as part of the manufacturing process.

In addition to XL, the Redi-Rock Freestanding Hollow-Core block was introduced in 2017. The hollow cores of this block can easily be filled with reinforcing steel and concrete to create a massive structure with enough strength to solve some of the most frequent challenges faced by retaining wall designers and installers, including attaching a barrier to the top of a retaining wall and creating flood protection walls. The manufacturing process requires only a simple bolt-in addition to standard Redi-Rock freestanding forms and requires no reinforcement within the blocks.

"Overall, sales of all our hollow core options are up about 17% versus last year. The market is ripe for lighter blocks," Vittitow said.

### Territories Available

Though there are 130 Redi-Rock manufacturers worldwide, key markets are still available. If you're interested in taking on an in-demand product line that optimizes raw material use and shipping, reach out to Redi-Rock. ■

### FURTHER INFORMATION

# REDI-ROCK®

Redi-Rock International  
2940 Parkview Drive, Petoskey, MI 49770, USA  
T +1 866 222 8400  
F +1 231 237 9521  
[andrew@redi-rock.com](mailto:andrew@redi-rock.com)  
[makeredi-rock.com](http://makeredi-rock.com)