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Precast Big Block Retaining Walls Expedite the  
Next Generation of Infrastructure Projects



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# Precast Big Block Retaining Walls Expedite the Next Generation of Infrastructure Projects

**Precast concrete manufacturers worldwide have the power to shift gears and revolutionize global building materials of the future with modern, automated approaches. In 2020, there were over 220,000 bridges in the United States deemed to be structurally deficient (report by American Road and Transportation Builders Association, 2021). With hundreds of thousands more worldwide, accelerating these projects will be essential from the perspectives of safety and future economic growth.**

From private developers to government agencies, extra versatility and innovative retaining walls are in high demand to combat deteriorating infrastructure. Precast big block retaining walls like MagnumStone are up to the challenge, offering modern engineering solutions that can be manufactured and installed efficiently at a swift pace. Case in point is a bridge abutment project for Alta Farms at Cane Ridge, located in Antioch, Tennessee, USA. This project showcases how MagnumStone precast retaining walls blocks are a viable solution to today's constraints of immense global labor shortages and backlogs of infrastructure maintenance.

MagnumStone's innovative big blocks have become an exemplary building material for future infrastructure projects worldwide. The hollow core block's ease of installation, proven track record of success and precast resiliency make it an optimal choice for infrastructure and development projects.

## Global Demand Growing for Precast Big Block Retaining Walls

The new Alta Farms at Cane Ridge multi-family development, owned by Wood Partners, hired the experts at SLN Contracting to install a new bridge structure to facilitate an access road over a seasonal waterway. The developers requested a modern looking retaining wall system for wing walls that could flank the bridge's large culvert and proficiently manage stormwater runoff from a nearby lake.

Equipped with 30 years of expertise installing retaining walls, Dwayne Lowery, owner of SLN Contracting, knew MagnumStone's precast blocks were a perfect fit for Alta Farms at Cane Ridge. Built in 2021, the project featured over 4,000 sq. ft. (372 sq. m.) of MagnumStone blocks with a maximum height of 16 ft. (4.88 m.) tall. Lowery selected MagnumStone's engineered design and handsomely rugged aesthetic thanks to his appreciation for the system's simplistic installation process and effective stormwater management capabilities.

LEE building Products owns the closest MagnumStone manufacturing facility to Antioch, Tennessee, located in Bardstown, Kentucky. LEE Building Products has a storied history of producing high-quality concrete products, including MagnumStone, and unwaveringly supplied the retaining wall blocks for Alta Farms at Cane Ridge.



*Installing bridge infrastructure with MagnumStone hollow core retaining walls for a property development in Antioch, Tennessee, USA.*

"We anticipate supplying precast blocks for a lot of infrastructure projects similar to this one across the southeast region of the USA, this product offers all of the solutions needed to replace and repair hundreds of bridges in our region," said Gene Rhodes, Product Sales Specialist of Lee Building Products. "Speed, economics and block availability all play prominent factors in these projects."

The SLN Contracting team discovered that considering labor and installation time, MagnumStone's precast blocks would be the most cost-effective retaining wall material. The system's cost-effective machine-powered installation methods even covered costs of shipping blocks over 130 miles (260 km) to Tennessee rather than installing locally available SRWs.

### Precast Retaining Walls Offer Time-Saving Installation Techniques

A big block retaining wall system's quintessential qualities for installation include saving time and costs, with the former contributing to the latter. A key benefit of precast retaining wall blocks is that sites can be staged in advance to accelerate timelines. When installing cast-in-place concrete, multiple teams - including crews for framing, rebar and concrete - must begin and finish their work before next steps can be taken. If any of those teams are delayed, project timelines quickly become derailed. These factors slow projects down, causing a trickle down effect that costs taxpayers or landowners more money in the end.



*MagnumStone precast retaining wall blocks offer superior aesthetics and provide major cost-efficiency with time-saving installations. Each block covers 8 sq. ft. (0.74 sq. m.)*



*Bridge infrastructure using MagnumStone’s high-strength, long-lasting retaining walls nears completion of wing wall design over large culvert.*

“MagnumStone’s precast retaining wall system is extremely easy to build, our crew can install a full truckload of these blocks in less than an hour,” said Lowery. “We could not have completed this bridge as quick as we did with any other retaining wall product. Installing an SRW system for this project would have taken six people at least six weeks to complete.”

MagnumStone blocks use 40% less concrete than solid concrete systems which helps keep projects on track by effortlessly moving blocks with hydraulic equipment, such as skid steers and even small excavators. With today’s global workforce shortages, this automated process helps eliminate many complications associated with project management.

The bridge’s wing walls had to be built together, one course at a time and measured each day to ensure the culvert’s positioning and structural integrity remained strong and intact. MagnumStone’s ease of installation was pivotal in order to maintain equal pressures on each side of the culvert throughout construction. SLN Contracting credits MagnumStone precast big blocks’ reliably quick installation process.

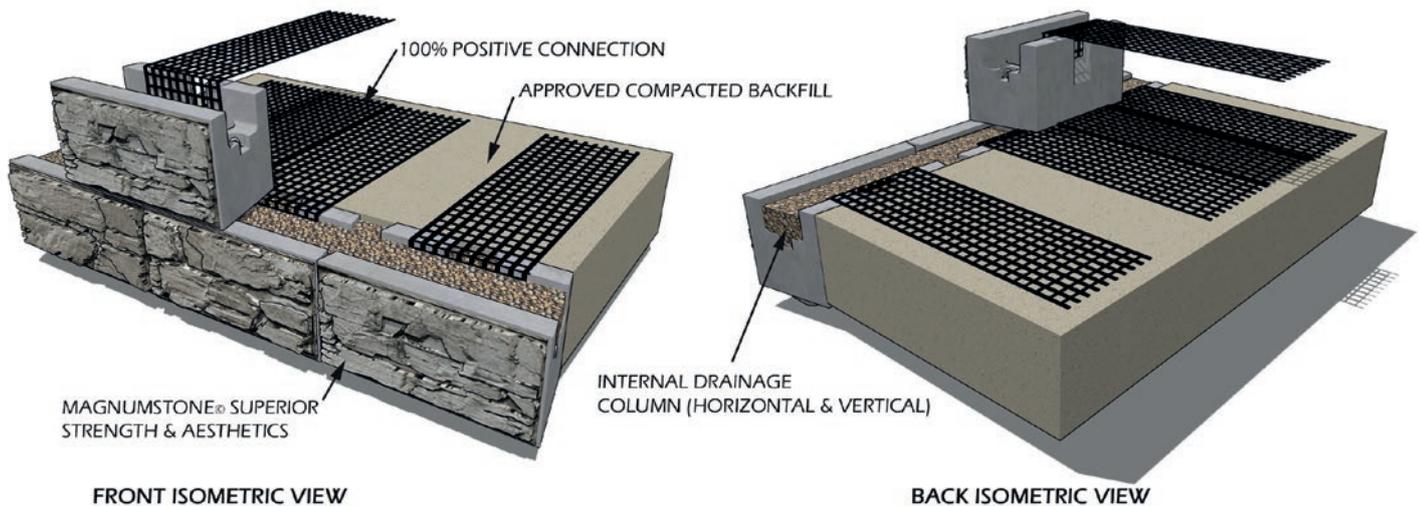
Each standard block covers a total of 8 sq. ft. (0.74 sq. m.) to maximize efficiency. The Alta Farms at Cane Ridge bridge was installed by only four people in four weeks. If not for a new access road’s logistical delays, the retaining walls would have been completed in just three weeks.

### **Design Positive Connection Retaining Walls with 100% Coverage**

The new bridge for Alta Farms at Cane Ridge is a positive connection design to accommodate heavy loads of the development’s construction equipment and large vehicles. With this design, the bridge meets Tennessee’s Department of Transportation (DOT) codes and aligns with Federal Highway Administration (FHWA) standards. With its weather-resistant precast blocks, MagnumStone excels in any retaining wall application, no matter the project size or complexity.

The project engineer, Trenton Smith of Dean Engineering & Design, LLC, in Knoxville, TN, used MagnumStone’s free on-line Retaining Wall Design & Analysis Software to ensure the design was structurally sound. MagnumStone’s precast hollow core block design allows for geogrid to pass through the top of the block and underneath. Combined with the retaining wall system’s running bond pattern, this provides 100% coverage of geogrid material above and below each course for maximum reinforcement and stability.

“By delivering 100% coverage for positive connection retaining wall designs, MagnumStone makes it easy to design with lesser strength geogrid,” said Smith. “Saving costs on unnecessary high-strength geogrid goes a long way. MagnumStone’s big blocks work great for reinforced walls, its block



3D Diagram demonstrating MagnumStone retaining wall positive connection installation with 100% geogrid coverage.

height of 2 ft. (0.61 m.) is truly a sweet spot for retaining wall design.”

The precast block’s defined, built-in drainage column at the front of the blocks also makes drainpipe planning easy to facilitate. Therefore, the hollow core’s vertical and horizontal drainage channels can easily adapt to fluctuating water levels of the stream below. This protects the newly built infrastructure and prevents future scour and erosion due to stormwater runoff from the lake upstream.

### Refreshing, Modern Aesthetics of Big Block Retaining Walls

Precast retaining wall blocks’ stellar durability and performance provide infinite reasons to select them for infrastructure and development projects. Appearance does play a role, however. For landowners, engineers and contractors, their hard work always feels more meaningful when projects look amazing. Thanks to MagnumStone’s precast forms, each block face’s natural looks blend into any landscape.

“Everything about the block is perfect, from its engineered design, beautiful looks - and it even eliminates the immense physical toll that lifting blocks day after day takes on our installation team,” notes Lowery.

It’s for that reason that the developers preferred MagnumStone’s gorgeously textured look, which gives the bridge a timeless, rocky aesthetic. The system’s precast form facings are forged from craggy outcrops of the Canadian Rockies which can infuse any infrastructure project with an element of authentic, natural beauty.

### Precast Retaining Walls Deliver All-In-One Infrastructure Solution

This modern bridge abutment for Alta Farms at Cane Ridge is a prime example of how to deal with infrastructure projects

across the world in effective, efficient ways. Precast big block retaining walls like MagnumStone can reduce exorbitant costs of supplementary materials and unnecessary project delays, two prominent factors which drastically complicate infrastructure projects.

The future of global infrastructure depends on streamlined processes, automation and innovative building materials. With less and less usable land to develop and design considerations like stormwater management becoming such a vital component of infrastructure, precast concrete products’ durability will soon be in demand more than ever.

Thousands upon thousands of crucial bridge and culvert abutments similar to Alta Farms at Cane Ridge will require repairs or full rebuilds over the next few decades. This project further proves that precast big block retaining walls will provide safe and financially sound solutions to maintain, advance - and expedite - the future of global infrastructure.

MagnumStone offers protected, licensed territories to manufacture precast retaining wall blocks with the best engineering support, software and products available on the market. ■

#### FURTHER INFORMATION



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