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## ON THE COVER:

**On the cover:** A precast concrete ReCon retaining wall gives the backyard space of a castle-like mansion in Massachusetts the perfect look.

Photo courtesy of Shea Concrete.

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## WHAT'S INSIDE

### Building a Bridge for America's Heroes

7

Two disciplines merge and create a beautiful bridge for one of the nation's most important cemeteries.

By Bridget McCrea

### Strength of Precast for Army Training Facility

10

By Mark Crawford

### Paving Slabs a Real Winner for Hawaii Project

15

NPCA Staff Report

### Walls that Rock

20

A precast retaining wall provides for an upscale backyard retreat.

By Shari Held

### Silence is Wooden

24

Precast concrete delivers sound wall panels for a massive Wisconsin interchange project.

By Mason Nichols

### Weathering the Storm

27

Stormwater system showcases speed and simplicity.

By Mark Crawford

### Mega Box Culvert a Mega Success

30

The first LowSpan prestressed, post-tensioned clamshell culvert installed in North America meets stringent criteria.

By Shari Held

### Keeping the Nation's Oldest Rail Structure Up and Running

32

Merchant's Bridge is renovated and brought up to engineering standards.

By Bridget McCrea

### Neighborhood Firewall

34

Norwalk Concrete Industries teams with Verti-Crete to deliver an ideal wall product for new, community-driven fire station in Ohio.

By Mason Nichols

### Franchise Licenser Directory

38

# A LICENSE TO BUILD

The evolution of the precast concrete industry in North America is a story of both need and innovation. Following World War II, America's resurgent economy, in combination with young men ready to settle down and start a family, became an incubator for small businesses.

Those young families were also building houses, traveling more and creating more need for concrete products. Meanwhile, contractors were discovering there was an easier way to accomplish their concrete-based projects using products that could be delivered to the job site ready to be installed. Put this all together, and you have the genesis of the North American precast concrete industry we know today.

Many precast concrete businesses started during this time began with one, maybe two product lines, some with licensed products, which were nothing new to the fledgling precast industry. In fact, the group that initially began discussing the framework of what would become NPCA were Unit Step licensors, and a number of precast companies today trace their roots back to a Wilbert Burial Vault license.

Today, licensed products play no less of a crucial role in the precast industry. While a lot has changed, some things have stayed the same, including the fact that a high percentage of precast companies are closely held, family-owned businesses. That means capital is not a bottomless well, and resources must be allocated carefully in pursuit of growth.

As plants have sought to diversify over the years, many turned to a growing market of pre-engineered, proven product lines. Not all plants have an engineering department to design the product, a fab shop to build the forms or the marketing to get the word out. Whether a company is looking to get into retaining walls, sound walls, agricultural products, stormwater management, bridges, paving slabs or more, there are products available to help enter that business.

The services offered by the licensor depend on the product and the company. But those services can include everything from engineering, forms and production training to technical data, sell sheets, marketing support and even job leads. In some cases, licensee meetings help manufacturers from across the country connect to help each other, and licensors may also help by keeping up to date on regulations and approvals and conducting R&D on an ongoing basis for its licensees. That enables the precaster to not only spend less capital to launch a new product line, but they can also achieve a rapid market entry, poised to gain traction and stay up to code.

The beneficial byproduct of the year-round marketing efforts by licensors is a raised profile for the entire precast industry as specifiers are made aware of the gamut of solutions the industry has to offer. The products also provide consistency and assurance as specifiers often call peers in other states to discuss their experience with the same product. When specifiers' needs are met, and they save time and money, it stands to benefit everyone who manufactures precast concrete products.

Throughout this issue's case studies, you will find a wide variety of projects, products and solutions made possible by licensed products and the quality precast concrete plants that manufacture them. As the industry continues to change, so too will the suppliers who ensure precasters are poised and ready to meet the evolving needs of the specifying industry.





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Photos courtesy of Faddis Concrete Products

# Building a Bridge for America's Heroes

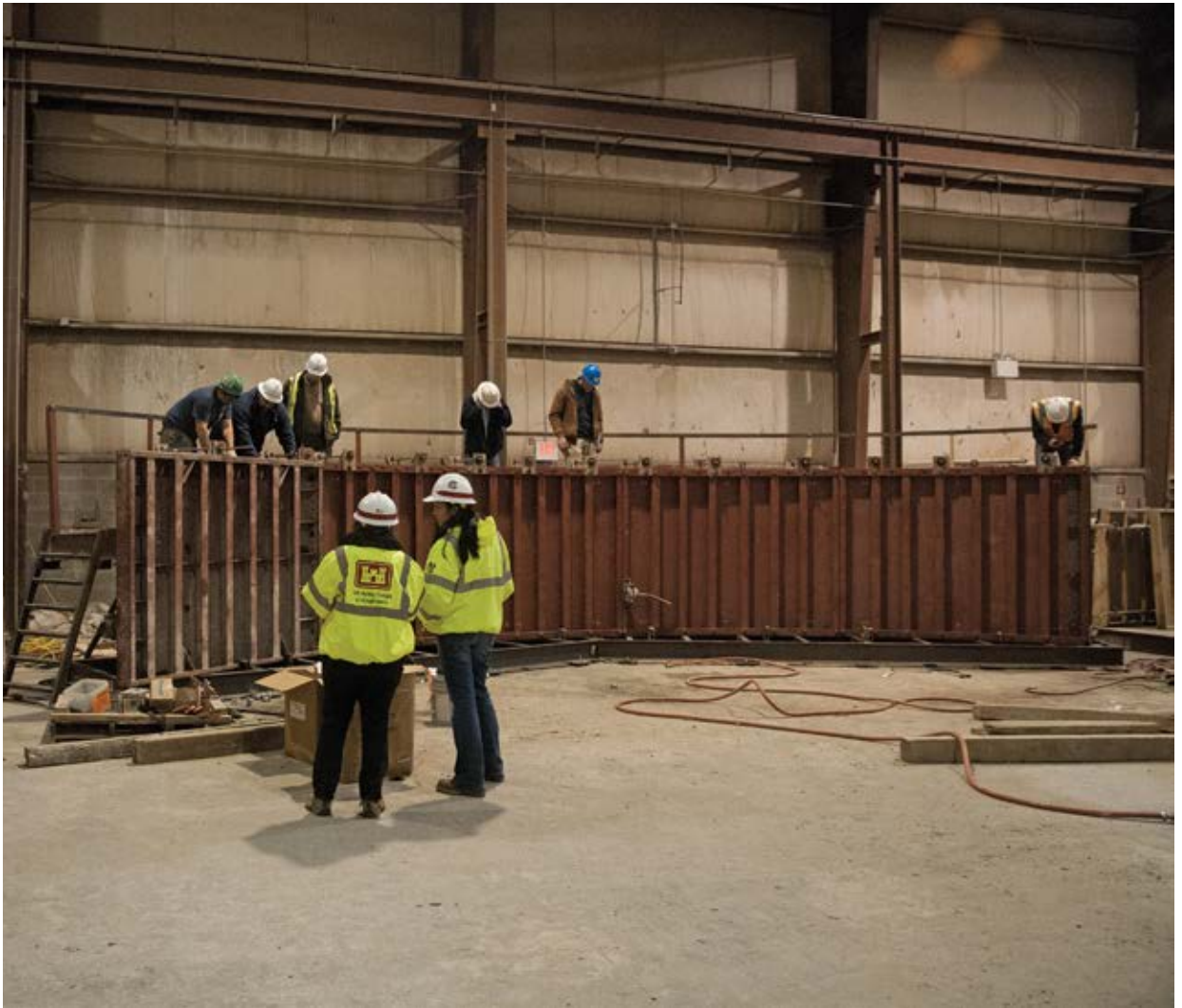
How one precaster used a licensed product to merge two disciplines and create a beautiful bridge for one of the nation's most important cemeteries.

By Bridget McCrea

**W**hen Arlington National Cemetery's Millennium Project opened to the public in 2018, four years of planning, designing, and building came together to add 27 acres of land, 6,000 pre-dug graves, and 16,000 niche wall burial spaces to the 154-year-old cemetery.

The cemetery hadn't been expanded in nearly 40 years and was slowly running out of room to honor and memorialize America's military veterans. At a cost of about \$81.7 million, the expansion space was assembled using a recreation spot for a nearby military





base, a construction staging area for the cemetery, and National Park Service woodland.

Precast concrete played a key role in the project, including two ECO-SPAN arch bridges, one of which is a 42-foot span twin-leaf Versa Series bridge that carries Loop Road over a restored stream. Featuring an open, long-span arch, the bridge protected the stream throughout construction to minimize any disturbance. The arch was designed to support up to 13 1/2 feet of earth cover. Mechanically stabilized earth retaining walls with natural stone facing hold the backfill in place both over and around the arch.

## GETTING TO WORK

Faddis Concrete Products worked with Forrester Construction and GeoConstructors to bring the project to fruition.

“We submitted a substantial amount of information to the Army Corps of Engineers to prove our capability of performing on this project,” said Gary Figallo, product manager at Faddis Concrete Products. “They even came to our Kutztown plant to approve us as a fabricator.”

Faddis was issued a license from ECO-SPAN's PreTek Group and built 12 total units, four of which weighed more than 15 tons.



Faddis Concrete Products produced 24 arch leaves to create a bridge that has a horizontal span of 42 feet.





Using the licensed product and a standard form to cast the bridge, they constructed the base plate (in the shape of the arch panels), and handled the cutting, welding and fabrication of the base plate. In total, the precaster made 24 arch leaves that were used to develop 12 complete arch segments, each of which comprised a left and a right leaf.

## OVERCOMING OBSTACLES

Figallo said the site topography made the project tricky, with a steep slope down to the stream. Two large truck cranes were positioned adjacent to one another, one needing to reach across the stream to set the arch on the far side. The cemetery site is very wet and muddy, for example, and the slope leading down the stream (where the arches were installed) had to be paved with crushed stone for the trucks that needed to navigate up and down the slope. Two large hydraulic cranes were positioned on one side of the creek bed and used to lift the arch leaves in the air one at a time, rotate them and then orient them for installation.

Clarence Mauser, plant manager at Faddis Concrete, said this was the first time the company had built a twin-leaf arch bridge.

“Our part of the project took about four weeks,” he noted. “We

built everything, stored the units on trailers and when the job site was ready, all we had to do was pull the trailers in.”

## A GOOD MARRIAGE

According to Figallo, the final product was well received by the project owner. The precaster has since performed other work for the Corps, and always appreciates the “stamp of approval” that it receives on those successful projects.

“We were really humbled and proud to be part of the Arlington National Cemetery facility,” said Figallo, who sees licensed products as a good investment for precasters like Faddis. “Our expertise is in precasting concrete, and ECO-SPAN’s expertise is in engineering. It’s a good marriage of two different disciplines.” **PS**

*Bridget McCrea is a freelance writer who covers manufacturing, industry and technology. She is a winner of the Florida Magazine Association’s Gold Award for best trade-technical feature statewide.*



# Strength of Precast Army Training Facility

By Mark Crawford

Like the lyrics say, the Army goes rolling along and is the first to fight for the right and build the nation's might. With those strong words as its ethos, training the next wave of brave men and women is imperative to the U.S. Army, and having facilities to do that is crucial. One of the largest training complexes the Army has is Fort Benning in Georgia, and precast concrete was at the center of a massive expansion.

A \$2.4-million project at the Malone Ranges included 37 precast Easi-Set Buildings produced by Smith-Columbia, the South Carolina division of the Smith-Midland Corporation. The

buildings included seven 26-foot-by-22-foot multi-user men's and women's plumbed latrines, 13 80-foot-by-20-foot classrooms, 13 single-unit 12-foot-by-10-foot ammo buildings, three double-unit 24-foot-by-10-foot ammo buildings, and one 14-foot-by-8-foot grenade bunker.

"The client selected precast because of its high-quality appearance, fast installation and 100-year-plus lifespan," said Ashley Smith, CEO of Smith-Midland Corp. "Fort Benning wanted structures that looked good and blended in with the existing base architecture. With a formliner finish, precast can be made to match almost any type of finish and material.





Photos courtesy of Smith-Midland Corp.

# st for cility

“They wanted the look of hand-laid masonry, but without the long lead time that hand-laid masonry would require.”

Easi-Set, in operation for more than 30 years, licenses various configurations for Easi-Set Buildings including storage units, dugouts, guardhouses, utility structures and more.

The buildings consist of panels manufactured with high-strength, steel-reinforced precast concrete, including roof and floor systems, and are prestressed or post-tensioned. The company’s patented, second-generation post-tensioning system applies internal pressure within the floor and roof panels using high-



By using precast concrete Easi-Set Buildings, the Army was able to quickly add additional facilities at its Fort Benning training facility in Georgia.





The precast facades were made to look like hand-laid masonry to match the existing architecture. By using precast, the project was completed in just a few months.

strength sheathed strands laid out in a circular pattern and cast into the concrete. The concrete is then mechanically stressed to 30,000 psi, adding increased strength to the panels to prevent cracking and water infiltration. Panels can be customized with extra features in the plant prior to delivery.

For the Fort Benning job, more than 350 precast concrete Easi-Set Building panels were engineered by Smith-Midland Corp. and manufactured by Smith-Columbia at its plant in Columbia, S.C.

Perhaps the biggest challenge for the project was the short turnaround – Smith-Columbia received the contract in April 2019, and the work was completed in mid-August 2019. With such a tight time frame, planning was crucial for the project to be successful.

A crane quickly off-loaded the precast panels at Fort Benning, and because Easi-Set Buildings can be installed on a level 4- to 6-inch layer of crushed stone, traditional foundations were not



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required. As a result, on-site installation was completed within a few hours.

“Precast was ideal for the short timeline, which could not have been accomplished with any other concrete solution,” said Smith. “Precast is highly durable, weather-resistant and requires very little maintenance. Of course, building the precast components off-site in a controlled environment also assures the greatest control and the highest quality.”

Smith noted that partnering with a licensor is a great way for precasters to add new products to their product lines.

“Licensees receive in-depth marketing and sales support, technical assistance and in-plant production training to help them build their business,” he said. **PS**

*Mark Crawford is a Madison, Wis.-based freelance writer who specializes in science, technology and manufacturing.*







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Photos courtesy of The Fort Miller Co., Inc.

# Paving Slabs a Real Winner for Hawaii Project

NPCA Staff Report

It's a sight drivers hate to see – orange barrels shutting down lanes of traffic on their rush-hour commutes. Such a scenario was exactly what Hawaii DOT could not tolerate when it became necessary to reconstruct 3.63 lane miles of Interstate H-1, the longest and busiest interstate in Hawaii, near Pearl Harbor just west of Honolulu. Sections of H-1 in this area, originally built on volcanic ash deposits between ancient lava flows, were heavily patched over many years, resulting in pavement surfaces that were unacceptably rough and deteriorated for the heavy, high-speed traffic in the area. A

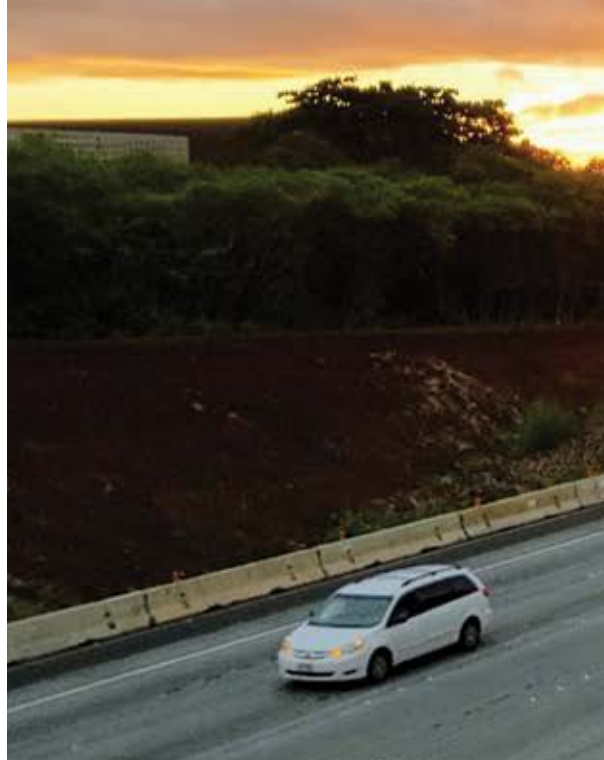
permanent upgrade was needed – without disrupting heavy traffic flow.

## PERMANENT SOLUTION

In 2017, Hawaii DOT explored the concept of rebuilding this area with precast concrete paving slabs because of a growing interest in the method and its proven success as a way to repair heavily traveled roads without causing major disruption to the traveling public. By mid-January 2018, HDOT awarded a design-build contract to a team headed by Kiewit Infrastructure West Co., based in Kapolei, Hawaii. This method of contracting was selected because of the complexity of the underlying pavement structure, the difficulty in designing a new surface that could be built under



A major rebuilding of Interstate H-1 in Hawaii has left officials and drivers happy thanks to its minimal traffic disruptions and quick timeline.



heavy traffic conditions and because of the need for designing and building the entire project in just seven months.

Kiewit elected to use the Super-Slab System because of a proven track record of successfully installing similar projects during overnight work windows and a proven long term durability record.

## PROJECT EXECUTION

Keys to the success of the project included Kiewit's decision to place a temporary asphalt overlay on the existing pavement to minimize grade differences during slab installation, taking a Ground Penetrating Radar survey of the existing pavement prior to any excavation and use of laser-controlled grading equipment. Kiewit began installation during the first week of May 2018, and completed it the second week of August. Installation rates varied from approximately 20 to 30 slabs per 7.5 hour work window in most areas and as many as 57 slabs per extended weekend closures. Kiewit worked closely with all team members to accommodate design and schedule requirements throughout the project.

Peter Smith, The Fort Miller Co., Inc.'s vice president of market development and product engineering, said the Super-Slab System provided many benefits for the project including





shop drawing design, opening the slabs to traffic before they were fully grouted and the ability to meet all geometric requirements of the project including non-planar (warped) slabs. The final pavement design required slabs that varied in shape, thickness, reinforcing and planarity. Approximately 44% of the slabs on the project were non-planar as required to meet the final design surface model.

## SUCCESSFUL PRECASTING PARTNERSHIP

GPRM Prestress manufactured more than 1,300 paving slabs for the project in fewer than three months, and they received a lot of technical and engineering help from The Fort Miller Co., Inc. along the way.

Will Wong with GPRM Prestress said they were able to cast nearly 20 panels per day once they got up and running.

“The Fort Miller Co., Inc. ended up being a big help on this,” he noted. “We were both new to each other. We were able to integrate our business styles and get the project executed. Everyone felt really pleased afterwards.”

Wong said thanks to the success of this project, HDOT is considering precast paving slabs for other projects.

Certainly the goal of keeping drivers happy was achieved on this challenging project. **PS**

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# Walls that R

**ReCon precast retaining wall system provides a creative, versatile solution for an upscale backyard retreat.**

By Shari Held

Photos courtesy of Shea Concrete Products





Rock





A ReCon retaining wall was chosen for the project because of its design flexibility and cost-effectiveness.

From the road the New England home is impressive on its own. But the addition of an intricately detailed, three-tiered retaining wall system to the backyard in 2017, makes the upscale property even more unique.

The project scope was ambitious. The two walls (22 feet and 14 1/2 feet in height) totaled 10,000 square feet. The wall system features built-in terraces – three on one side, two on the other. Highlights include a dining/entertainment terrace, a built-in water slide leading to an in-ground swimming pool and two stairways.

## RECON: A NATURAL CHOICE

Through research, it was determined granite slabs would be cost-prohibitive and replicating a textured granite finish would have been difficult and costly using cast-in-place concrete.

Dennis McClain, owner of North Reading, Mass.-based MDM Construction and the project's general contractor, had worked with ReCon blocks before and suggested it to the customer.

Besides being cost-effective, ReCon retaining wall systems can achieve great height without using reinforcement. The interlocking tongue and groove blocks measure 16-inches-by-48-inches with variable depths from 24-to-84 inches. Block weights range from 1,400-to-4,100 pounds.

But it was essential to create a wall system that meshed with the scale and look-and-feel of the pink Deer Island granite mansion.

Ultimately it came down to aesthetics. The customer liked the look of ReCon's North Shore granite texture wall finish, a standard item for Shea Concrete Products.

"The size of the granite used for the house and the size of our block complemented each other well," said Larry Cutts, project manager with Shea Concrete Products, which is





The ReCon blocks were given a granite textured finish to match the aesthetics of the house.

headquartered in Amesbury, Mass. “From the very beginning, our wall looked like it belonged there.”

## OVERCOMING CHALLENGES

Almost every project encounters a few glitches. For this one, the plan was a work in progress.

“The customer gave me a rough idea of what he wanted, and we just went with it,” McClain said.

This required frequent changes that necessitated on-the-fly implementation. Using ReCon blocks proved instrumental in surmounting this challenge.

“Our blocks are very versatile,” said Greg Stratis, president and operations manager of Shea Concrete Products. “You can make adjustments easily as you are building the wall.”

Fast delivery also helped. MDM ordered materials for next-day delivery – typically two-to-three truckloads. Over the course of the year-long project, Shea Concrete Products delivered 65 truckloads of material.

One big challenge was the installation of the stairways connecting the terraces. The stairways

required plumb vertical walls. However, ReCon retaining wall system blocks are designed with a setback of one-inch per course which, if left uncorrected, would create a widening gap. MDM solved that issue by trimming one inch off the back of the key to pull the block all the way forward into vertical alignment, ultimately eliminate any gapping. The wall design was reconfirmed with zero-degree wall batter.

## WALLS DONE WELL

Everyone was pleased with the results, with Stratis even being offered a tour of the house by the owner when the job was complete.

“This contractor and the owner had the budget and the mindset to do something a little outside of the box,” Cutts said. “It came out really well.” **PS**

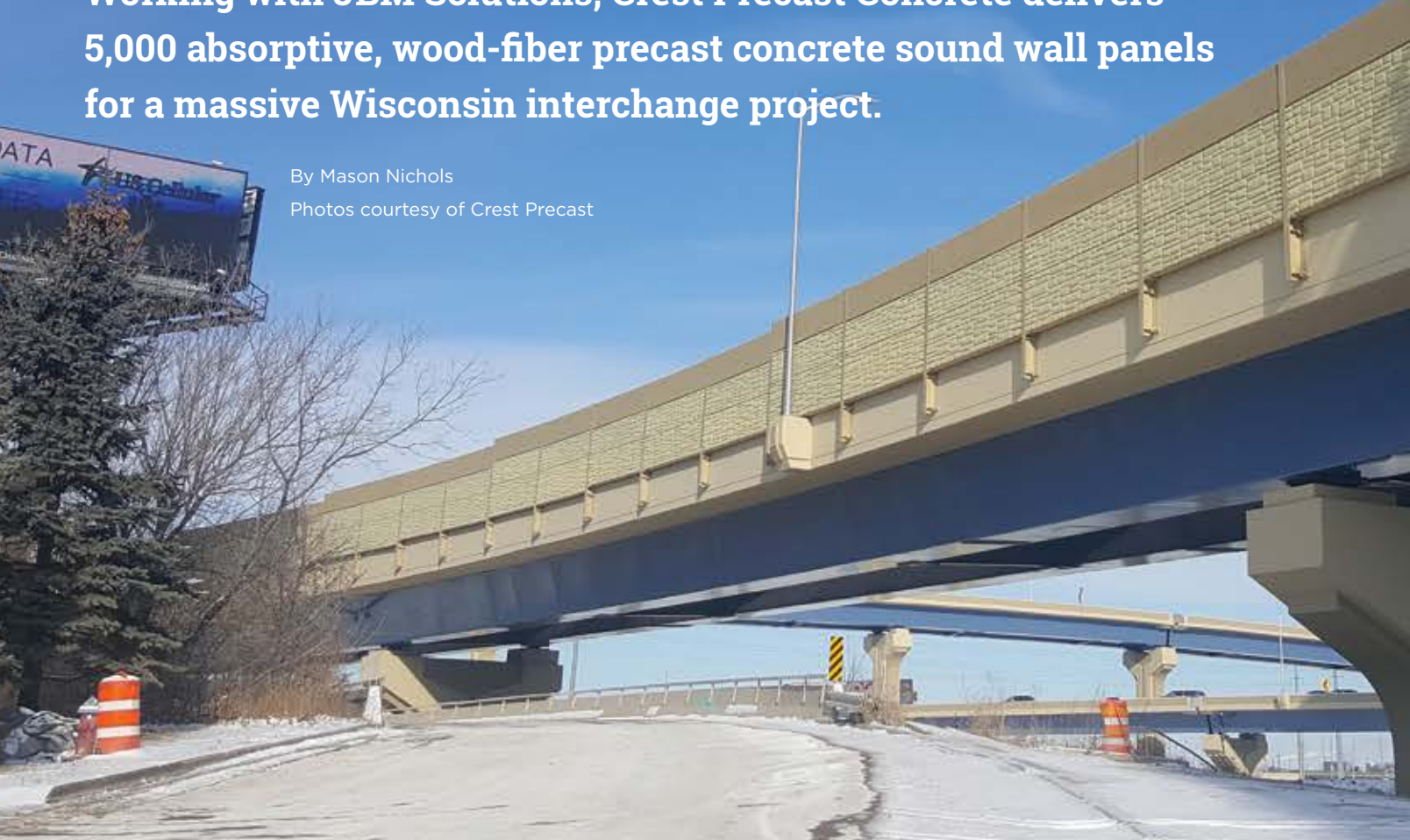
*Shari Held is an Indianapolis, Ind.-based freelance writer who has covered the construction industry for more than 10 years.*

# Silence is Wooden

**Working with JBM Solutions, Crest Precast Concrete delivers 5,000 absorptive, wood-fiber precast concrete sound wall panels for a massive Wisconsin interchange project.**

By Mason Nichols

Photos courtesy of Crest Precast



For residents who live near or adjacent to highways, sound can be a major nuisance. The most common noise-abatement solution is the addition of sound walls, which work by absorbing soundwaves or reflecting them away from homes. According to Jerry McNeal, owner of JBM Solutions, the Wisconsin Department of Transportation has turned to absorptive precast concrete sound walls as the product of choice for major projects.

“The Wisconsin DOT determined 30 years ago that absorptive walls have a big advantage because sooner or later a highway will have walls on both sides,” he said. “When this happens, sound will bounce back and forth,

increasing in volume until it actually escapes over the top.”

But absorptive walls act as a sponge, soaking up the sound waves to greatly reduce or even eliminate noise. For this reason, the Wisconsin DOT partnered with JBM Solutions, Crest Precast Concrete of La Crescent, Minn., and Walsh Construction on the Milwaukee Zoo Interchange project. In 2018, the project team finished setting nearly 200,000 square feet of JBM75, a licensed precast concrete sound wall product featuring a specialized mix design that includes wood fibers.

This project was much larger in scope than Crest’s typical sound wall work. But thanks to a





The absorptive sound wall features a pattern on the front and back so it's visually appealing to drivers and residents.

decade-long relationship with JBM Solutions, both companies were confident in their work and in absorptive precast concrete sound walls as the optimal solution. According to Gary Mader, vice president of Crest Precast Concrete, a typical day included the installation of 60-120 precast panels. With 5,000 panels to place, this could have presented a logistical issue, but the team worked closely together to ensure success.

"Because the panels had to be set consecutively, we shipped them in numerical order," Mader said. "Then, when delivery took place, the panels weren't placed on the ground. They were installed directly off the truck."

Kevin Thicke, drafter for Crest Precast

Concrete, explained that the panels each have a DNA pattern on the front with a random ashlar appearance on the back. As a result, the wall is as aesthetically pleasing as it is effective at mitigating noise.

"After the project finished, I interviewed a resident who was very happy with the result," Mader said. "As a manufacturer of sound wall products, hearing that we accomplished our goal is the greatest compliment we can receive."

Though installation is simple, achieving high-quality results is not. That's why, as McNeal explained, JBM Solutions and Crest Precast make such a great team. Over the years, the two organizations have worked closely together – staying in constant contact – to continuously enhance and perfect the product. The result is a durable, effective solution for Milwaukee-area residents that makes life a little quieter. **PS**

*Mason Nichols is a Grand Rapids, Mich.-based writer and editor who has covered the precast concrete industry since 2013.*

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Photos courtesy of Contech Engineered Solutions

# Weathering the Storm

Stormwater system showcases speed and simplicity.

By Mark Crawford

Scranton, Pa., is known for many things: being the home of fictional paper products company Dunder Mifflin, becoming the first city in the country to have streetcars powered only by electricity, and the sixth-largest city in Pennsylvania. As the area begins to attract more business, new offices are starting to pop up.

One such building, Richland 315, is a 53,000-square-foot building under development. With its large footprint and amount



Workers install the Terre Arch 26 stormwater system for an office park in Scranton, Pa. The system was chosen for its quick installation time with the basins being installed in just two days.

of impervious surface, stormwater detention is a key part of the project. Thanks to a precast concrete system, residents and workers won't have to worry.

Contech Engineered Solutions, headquartered in West Chester, Ohio, recently installed two Terre Arch 26 stormwater detention systems for the building located between Scranton and Wilkes-Barre.

Designed for underground installation, Terre Arch is a modular, multi-chambered, precast concrete stormwater storage system. Contech is the exclusive licensee for the system, originally designed by Terre Hill Concrete Products.

Precast concrete was selected for the project because of its strength and durability, providing a 100-year-plus lifespan. Once installed, the precast units are sturdy enough to handle heavy truck loading and also provide access to individual chambered rows to facilitate maintenance. The ease and speed of installation of precast components was another top consideration.

"The simplicity of the Terre Arch system allows for standardized fixed forms to be used for maximum efficiency through manufacturing," said Kevin Tracy, director of stormwater sourcing and operations for Contech. "The strength of the concrete, combined with the loading benefits achieved from the arched shape, offers a significant benefit over non-precast

chamber systems and makes this system a good choice for projects with minimal depth of cover."

Speed of assembly was another important consideration for this project. Each precast unit installs quickly – a team can create several hundred cubic feet of storage within a matter of minutes. With a properly excavated and prepared base, a Terre Arch unit can be set every five minutes. At this rate, up to 50,000 cubic feet of storage can be installed in one day, including cover and backfill.

For example, one of the basins consisting of 82 arches and 12 distribution manifolds was installed in just two days. This is an impressive feat considering it provides more than 31,000 cubic feet of storage capacity.

The system is a connected four-arch precast concrete structure providing 277 cubic feet of installed storage and 152 square feet of stone infiltration area. The Terre Arch 26 basin was an ideal solution when faced with the site restrictions such as high ground water tables and minimum separation between the top of the underground structure and the finished grade.

"This product is ideal for shallow burial applications and combines the strength and durability of precast concrete with the installation efficiency of chambered systems," said Elaine Thomas, product manager for Contech. **PS**

*Mark Crawford is a Madison, Wis.-based freelance writer who specializes in science, technology and manufacturing.*



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A licensed clamshell culvert was the perfect solution for a project in Chippewa County, Michigan, providing the right size, strength and durability in a timely manner.

# Mega Box Culvert a Mega Success

**The first LowSpan prestressed, post-tensioned clamshell culvert installed in North America meets stringent criteria while providing an affordable solution.**

By Shari Held

**P**recast concrete is chosen for projects for a variety of reasons, whether that's strength, its durability, speed of installation or more, and one project in Michigan required precast for all those reasons to ensure success.

The Chippewa County Road Commission (CCRC) in Michigan needed an economical solution for replacing the failing Charlotte River crossing at 12 Mile Road. The metal pipes in the existing twin-tube structure were corroded, and it was inadequate for the size of the water course. The crossing often flooded during spring run-off, creating erosion issues. Plus, the Michigan Department of Environmental Quality specified that replacements meet the bankfull widths of the water course.

"In this case, it forced us to go from a 20-foot span structure

to a 30-foot span minimum," said Rob Laitinen, superintendent manager for CCRC.

A traditional reinforced culvert couldn't meet the bankfull width specification, leaving a free-standing bridge as CCRC's only option. But it wasn't a good one. The area's corrosive clay soil offered poor weight-bearing capacity. A bridge would have required multiple vertical steel piles in excess of 100 feet in length and expensive lightweight geofoam backfill. Deep piling could potentially penetrate a nearby artisan aquifer, causing groundwater leakage. And, the road would be closed an estimated 60-plus days.



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## LOWSPAN MEGA-BOX: AN ALTERNATIVE SOLUTION

A brainstorming session between CCRC and Escanaba, Mich.-based Upper Peninsula Concrete Pipe Co. (UPCPC) led to the design and creation of a LowSpan clamshell-style culvert called Mega-Box. The innovative, three-sided precast prestressed design provides added structure and span lengths of up to 70 feet to conventional LRFD HL-93 loading and 50 foot spans lengths to MDOT's enhanced HL-93 modified load (72 kips/axle), as was required for 12 Mile Road. The bottom slab is placed below the stream bed and acts as a foundation, making it stable even in poor soil and eliminating the need for piles and costly backfill. In fact, Laitinen calculated the Mega-Box was approximately one-third of the price of the bridge for this project.

## DESIGNED FOR STRENGTH

"This was the first of its kind," said John Kloet, president of Gladstone, Mich.-based LowSpan LLC, a UPCPC spin-off. "Gaining familiarity with efficiencies in design, casting and installing was the main project challenge."

LowSpan culverts achieve the strength to span large widths by prestressing the top and bottom slabs. The concrete is poured into the form over high-strength, pre-tensioned steel strands. The structure has a life expectancy of 100 years.

## A DIY INSTALLATION

The installation process was smooth from start to finish partly because of the size and weight of the Mega-Box components.

The 11 main components were 30-feet-long, 6-feet-wide and 4-feet-tall and weighed 33 tons each. Everything could be delivered via conventional truckloads, which was a big plus.

"The clamshell design reduced the weight of each piece by half (compared to a full-box section)," Laitinen said. "That also reduced the size of the crane necessary for installation. The design just adds a lot of benefit."

LowSpan supplied a crane operator to operate the Grove 275-ton mobile crane and an overseer to guide the assembly. The installation of the Mega-Box took just two days and the road was closed only 30 days during the entire project.

## MEGA-BOX PROVES ITS VALUE

Initially, CCRC monitored the structure for stability weekly, then quarterly, and once this year. Laitinen said it has been rock solid.

"I would consider this project a success in every way," Laitinen said. "It meets all the modern highway load ratings, it met our needs for reducing costs, and we were able to utilize our own people and excavating equipment to install it. I take a particular amount of pride in having accomplished that."

Kloet sums it up this way: "Mega-Box provided the right product for the conditions and loading criteria." **PS**

*Shari Held is an Indianapolis, Ind.-based freelance writer who has covered the construction industry for more than 10 years.*



Photos courtesy of RECo

# Keeping the Nation's Oldest Rail Structure Up and Running

Spanning the Mississippi River, Merchant's Bridge is renovated and brought up to engineering standards using precast concrete and a licensed mechanically stabilized earth wall.

By Bridget McCrea



**M**erchants Bridge in St. Louis, Mo., is the oldest rail structure that crosses the Mississippi River. Built in the late-1800s, it is still going strong despite its age. Precast concrete is helping to extend its life after filling an important function in the bridge's most recent renovation.

Last year, the Terminal Railroad Association of St. Louis (TRRA) enlisted the St. Louis Bridge Construction Company and Schrimpf Landscaping to help increase the bridge's capacity and meet new engineering standards.

Working with The Reinforced Earth Company, Champion Precast built a solution that was used to renovate the bridge's west approach on the Missouri side. Using a modified mechanically stabilized earth (MSE) wall design, the precaster made a wall that would allow the existing trestle to be left in place – a feature that ensured the railroad would continue operation during most of construction.

## PAIRING UP

Steve Perotti, plant manager at Champion Precast, said the company works often with RECo, from which it licenses its MSE walls. The project is broken up into two phases with the first phase encompassing nearly 60,000 square feet. Perotti noted the second phase, which is on the Illinois side of the river, will begin soon.

For the first phase of the project, RECo supplied Champion Precast with the molds and the shop drawings.

“We basically just took off with those plans and started pouring; it was a pretty straightforward project for us,” Perotti explained.

According to RECo, the trestle volume was filled from the bottom up with low-density cellular concrete (LDCC) and enclosed by concrete panels, which were anchored to the fill with galvanized steel MSE soil reinforcements. The LDCC was flowable, required no compaction effort, and was placed in vertical lifts larger than a granular backfill would be.

Once the walls were constructed to the required grade, rail traffic was stopped and the new ballast and tracks were installed.

## MEETING CLOSE TOLERANCES

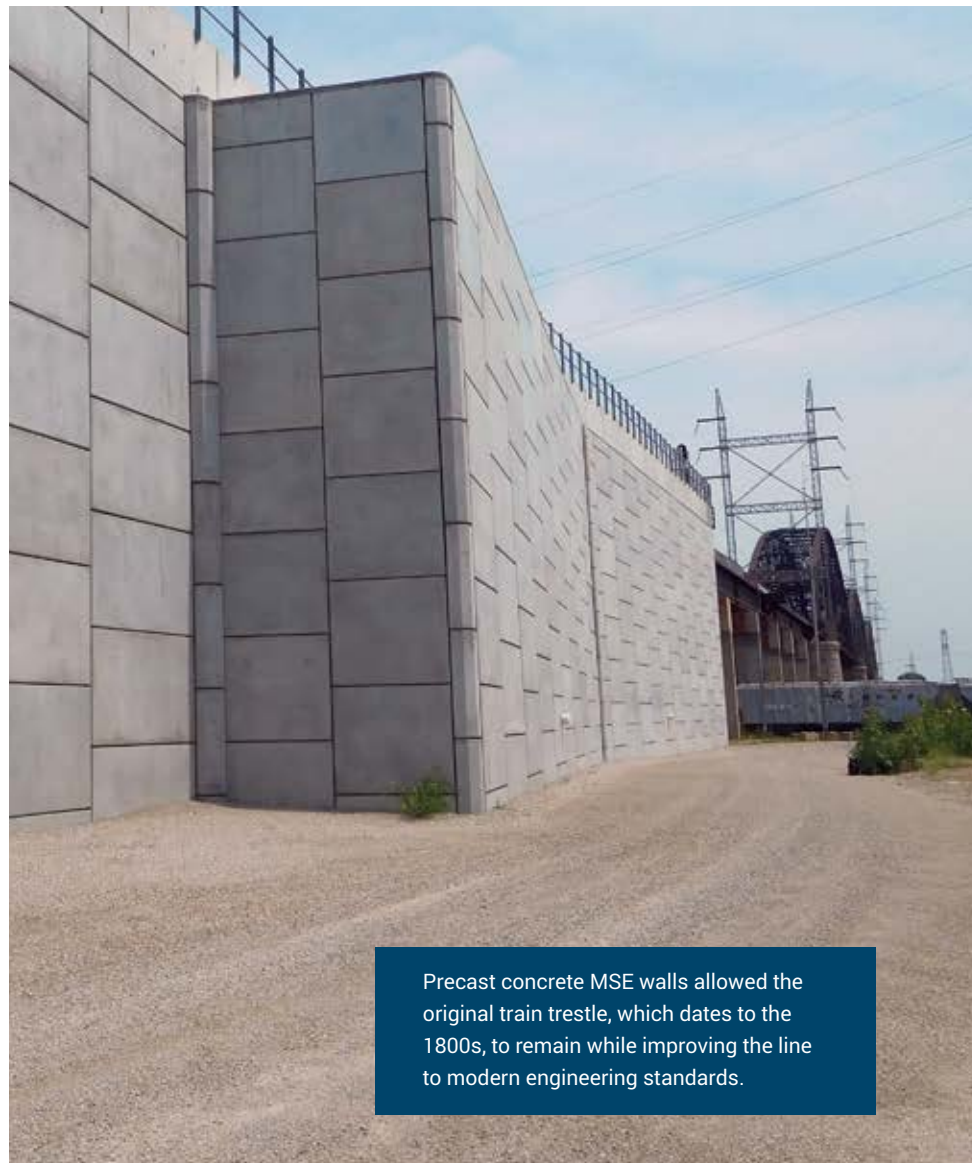
Champion Precast did have to coordinate with Schrimpf Landscaping on load deliveries, use special headers for reinforcement and meet close tolerances.

“There was no coping to cover the top panels so those panels had to be made exactly to the shop drawing specifications,” Perotti explained.

According to Perotti, RECo handled all of the wall engineering, developed the shop drawings and provided the molds. He says the project worked out well, and he expects the same outcome for Phase II of the project.

“There's another 50,000-or-so square feet on the other side of the river to do and it will all be done using the same MSE walls, which are working out really well,” Perotti said. **PS**

*Bridget McCrea is a freelance writer who covers manufacturing, industry and technology. She is a winner of the Florida Magazine Association's Gold Award for best trade-technical feature statewide.*



Precast concrete MSE walls allowed the original train trestle, which dates to the 1800s, to remain while improving the line to modern engineering standards.



# Neighborhood Firewall





Photos courtesy of Norwalk Concrete Industries

## Norwalk Concrete Industries teams with Verti-Crete to deliver an ideal wall product for new, community-driven fire station in Ohio.

By Mason Nichols

For more than a century, firefighters in Norwalk, Ohio, called the fire station at 42 Whittlesey Ave. home. The station had served Norwalk admirably but, after 106 years, no longer provided the space or safety required for efficient operations. Thanks to a massive community effort – and a little help from precast concrete – the city opened a new 17,000-square-foot station last fall.

Construction of the new facility, located just down the road from the original building, was made possible thanks to donations from a variety of local businesses, including Norwalk Concrete Industries.

“This was a huge effort by local contractors to support the work and lower the tax burden for the community,” said John Lendrum, president of NCI. “We were proud to participate.”

NCI contributed many different precast products, including drainage structures, meter pits, a grease interceptor, Easi-Set Buildings and more. But it was the company’s above-ground donation, a 350-linear-foot Verti-Crete wall, that immediately caught the eye of Norwalk residents. The precast concrete wall, located on the northeast side of the property, acts as a barrier between the fire station and an adjacent neighborhood.

“You can imagine that light and noise would be a concern for the residents there,” Lendrum said. “Precast concrete is a great fit because it limits that light and noise while providing a strong, durable solution that doesn’t require a lot of maintenance.”

The quality of the wall is ensured thanks to more than a decade of collaboration between NCI and Verti-Crete. With that much experience together, every completed project benefits from a proven track record of engineering, formwork and installation. Additionally, NCI has installed the licensed Verti-Crete wall product on a diverse array of



projects in the past, including everything from nursing homes in Ohio and Pennsylvania to large-scale highway work in Indiana. Those combined experiences add up, resulting in a trusted solution that the Norwalk Fire Department can rely upon for years to come.

Rob Duncan, mayor of the city of Norwalk, expressed his satisfaction with the quality of NCI's work and Verti-Crete's wall.

"The fencing exceeded our expectations in terms of attractiveness while providing screening for the station's neighbors," he said. "In addition, the fencing complements the building and provides enhanced security and egress from the station. The city remains grateful to NCI and all of our donors who made this project a reality."

The number of organizations involved was also of particular importance to Lendrum.

"Contractors usually compete head-to-head with one another every day, but when it came time to complete a local project and support our Norwalk community, everyone was there with a shovel and tools ready to get to work," he said.

The result of that work was \$2 million in donations on a \$5.5-million project, and a fire station that stands ready to serve the people of Norwalk for at least the next 106 years. **PS**

*Mason Nichols is a Grand Rapids, Mich.-based writer and editor who has covered the precast concrete industry since 2013.*







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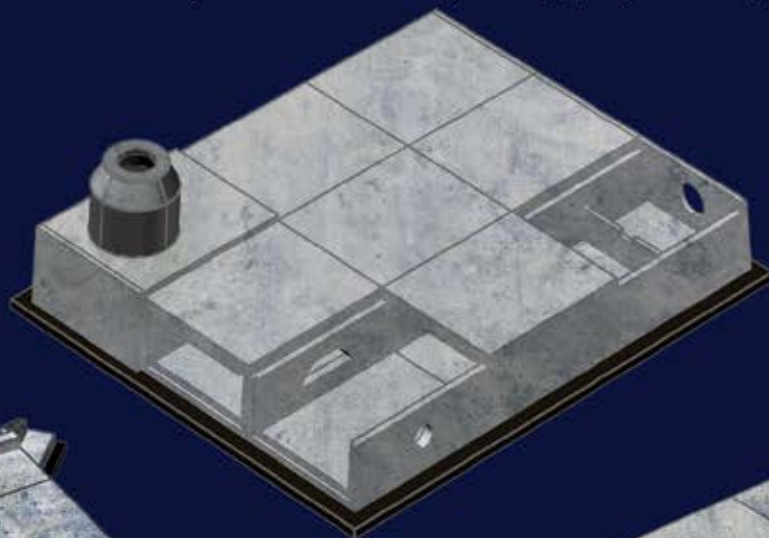
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