Concrete Plant International
North America Edition

4 | 2026

www.cpi-worldwide.com

REPRINT | NEWS

Raising the Bar (and the Tank)



REPRINT
CPI 4/2026

Known for versatility and durability, precast concrete is pushing into new territory – elevated water tank support systems

Raising the Bar (and the Tank)

■ Shari Held, National Precast Concrete Association, United States of America

Traditionally, carbon steel has been the support structure for water storage tanks. But it has several disadvantages when used as a water storage tank support structure. Steel support structures require regular maintenance, such as repainting, to deter rust. In addition, mid-air maintenance increases maintenance costs and poses a safety hazard. There is now an alternative to carbon steel. Chairman of the Board and Chief Technical Officer Benjamin Johnston of Pittsburg Tank & Tower Group (PTTG) and Jerry Smith, P.E., former development engineer for special projects at PTTG, developed a revolutionary system-Mini Composite Elevated Tank-using precast concrete segments. PTTG, located in Henderson, KY, received its patent for the new product in December 2025.

The first two water storage tanks to utilize the new technology were built in Purcell, Missouri and North Hampton, Ohio.

"The biggest challenge, as with any new product, was getting people to believe in it," Johnston said. "Fortunately, we had a good engineer and good owners who understand the value of looking at new concepts and not being afraid."

PTTG found the Quincy Water Association bid on a government bid site. The association needed a new 100,000-gallon elevated water tank with a high-water line of 89.5 feet. To secure project funding, the project had to be finished within a set deadline. The project was necessary to meet the needs of the residents of Splunge, Miss. The bid originally specified a traditional elevated tank made from carbon steel. But when the association learned of PTTG's precast concrete solution, it changed the specs for the job.

"This is a brand-new patented product that we're rolling out to the marketplace," Johnston said. "It's the first one of its kind in Mississippi and only the third one in the United States."

Precast Scores Major Points

Precast concrete has many advantages over other building materials. It is durable, long-lasting, and nearly maintenance-free. According to Johnston, economics was the primary reason precast concrete was selected over carbon steel for the Quincy Water Association project.

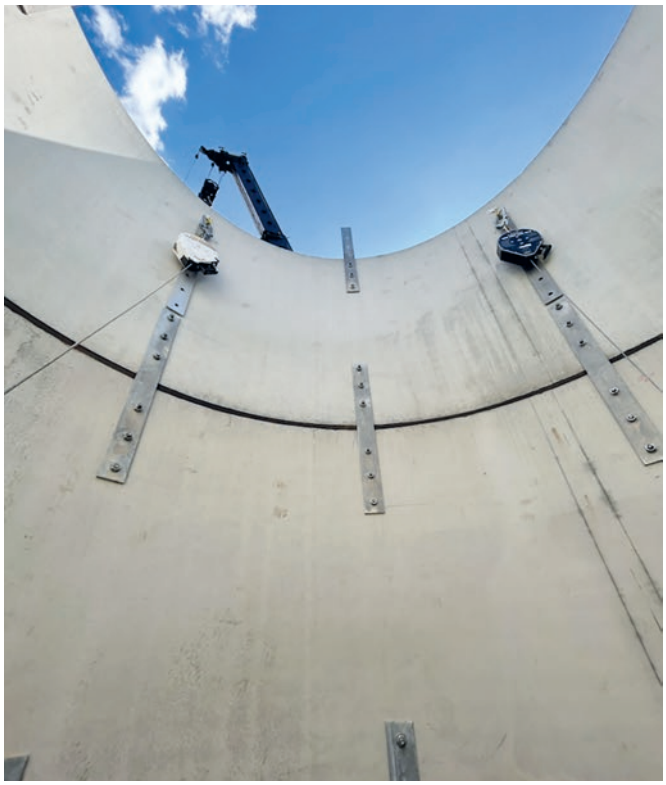
"When you look at the life cycle cost analysis of the tank, the precast segments that support the tank never require any maintenance or service," Johnston said. "This product offers long-term benefits and cost savings."

In addition, 70% of the man-hours used to build a precast concrete tank support are completed on the ground rather than in mid-air. This greatly improves safety. Producing the precast elements in a plant environment ensures a superior quality than using cast-in-place concrete. And concrete is a sustainable material.

Using local precasters for each project is also a plus for everyone.



Lee's Precast Concrete fabricated 11 stackable riser sections, each weighing 22,500 pounds.



Using 5,000-psi self-consolidating concrete, Lee's Precast produced one tower riser element per day.

"Putting part of the project cost dollars back into the local community is very important," Johnston said.

Rising to the Occasion

PTTG selected Lee's Precast Concrete, an NPCA-certified precast manufacturer based in Aberdeen, MS, to fabricate the precast tower riser elements for the Quincy Water Association.
"We felt like it was within our realm of capabilities," said Allen Lee, general manager for Lee's Precast Concrete. "We already produce manhole structures, though not in that large of a diameter, and we have a 50,000-pound crane capacity."

PTTG sent its patented Manway riser molds to Lee's Precast and provided training on the setup to ensure the resulting precast elements met PTTG's specifications. Lee's Precast used a 5000-psi self-consolidating concrete with entrained air to protect the precast elements from freeze-thaw cycles. To reinforce the precast tower riser elements, Lee's Precast used a blend of wire cages and rebar. No. 6 U-bars were placed around the connection points of the tower risers and No. 3 vertical bars, at 12 inches on center.

"The spacing between the two cages had to maintain a certain clearance of steel on the inside of these ring sections, and we had to maintain a certain amount of cover on the reinforcing steel for the outside cage to ensure long-term structural integrity," Lee said.

The decision to use rebar was left to Lee's Precast.

www.cpi-worldwide.com

STAY UP TO DATE

AND REGISTER NOW FOR OUR NEWSLETTER!

Register now



CPi-Newsletter

ICCX-Newsletter

Register online:
www.cpi-worldwide.com/registration

CONCRETE PLANT INTERNATIONAL





Section by section, the precast concrete tower takes shape as crews install the patented support system for the 100,000-gallon elevated tank.

"The benefit of having a flexible design is we can sit down and discuss with the precaster what needs and methods work best for them, what makes the design work for them," Johnston said. "We don't have to dictate their process."

In all, Lee's Precast produced 11 stackable tower riser elements. Each six-foot element weighed 22,500 pounds, had an outside diameter of 11 feet 11 inches, and walls 8.5 inches thick. Nine of the 11 precast risers are identical, but two are different to allow the plumbing to be accessed. And while most risers have a joint, these tower risers have embedded connections that fasten everything in place.
"Our biggest challenge was how much labor it would take to put the embeds in place," Lee said. "But our guys are always up for a challenge."

Another challenge was that the form took multiple pours to fill. Workers gave the mold "love taps" to help the batches mesh so the exterior would be smooth and unblemished. Lee's Precast produced one element per day, beginning on August 11, 2025.

User-Friendly Installation

Special permitting was required to ship the elements approximately 30 miles to the job site. The precast elements were loaded onto oversize flatbed trailers, two at a time. Space was tight in the unloading area, and trucks had to back up a steep hill to access it. Most of the construction was completed at the ground level, making the construction much safer than traditional methods.
The biggest challenge with the installation was to ensure the tower risers lined up correctly. The elements had to be kept level as workers stacked them vertically using a 50-ton Manits Crawler Crane. However, PTTG had experience with two taller water tank support systems. This project is where all prior experience came to bear. The installation came off without a hitch.

PTTG began the project on February 10, 2025, and completed its part of the project in February of 2026. The tank is currently operational and in service.

Looking Forward

"We were pleased to be involved in this project, which is unique in our state," Lee said. "I hope it is a great success."

PTTG's new technology isn't just for new water tanks. It can also be used to elevate water tanks that need to be raised to achieve proper water pressure. Up to four sections of precast can be fabricated to easily modify the height of the existing structure.

"We are extremely excited to be bringing new technology and new concepts to an industry that's been around for 150 years," Johnston said. ■

FURTHER INFORMATION

NPCA
NATIONAL PRECAST CONCRETE ASSOCIATION

www.precast.org



NPCA CERTIFIED PLANT

When You're Certified, You're Trusted.

Why Get Certified?



Increase Revenue

- Qualify for high-value public and private projects.
- Win more bids with certification as a competitive advantage.

Boost Credibility

- Claim official recognition from a trusted, ANSI-acredited body.
- Reinforce commitment to quality assurance and standards.
- Demonstrate solid management and best practices.

Improve Efficiency & Safety

- Identify cost-saving opportunities in materials, labor and rework.
- Reduce errors with better processes, procedures and documentation.
- Confirm safe workplaces, qualified personnel and trained employees.

Enhance Customer Confidence

- Deliver consistent, high-quality products that project owners can trust.
- Exceed project expectations with reliable, consistent performance.

Ready to Get Started?

Let NPCA Guide you every step of the way.

Call **800.366.7731** or email **certifications@precast.org.**

For more than 35 years, the National Precast Concrete Association's Plant Certification Program has been the industry's trusted standard for ensuring the quality, reliability and long-term performance of manufactured precast concrete products.

To learn more, scan to visit precast.org/certification

41 State DOTs
require or recognize NPCA Plant Certification.

400+ Plants
have achieved NPCA Certification.

1,000+ In-Plant Inspections
conducted by independent NPCA program auditors since 2021.

"The cost of certification is minimal compared to the benefits... fewer rejected castings, less rework, and real savings."
– John Lendrum, Norwalk Concrete Industries

ANAB ANSI National Accreditation Board ACCREDITED ISO/IEC 17065 PRODUCT CERTIFICATION BODY

NPCA is accredited by ANSI National Accreditation Board (ANAB) and meets the strict requirements of ISO/IEC 17065:2012.

© 2025 National Precast Concrete Association ® NPCA and National Precast Concrete Association are trademarks owned by the National Precast Concrete Association.

1320 City Center Drive, Suite 200 | Carmel, IN 46032 | (800) 366.7731 | precast.org