

Once in a Generation // Living on the Edge // Gravity Grease Interceptors // Par Excellence

# precast solutions®

FALL 2021  
ISSUE

## Living on the Edge

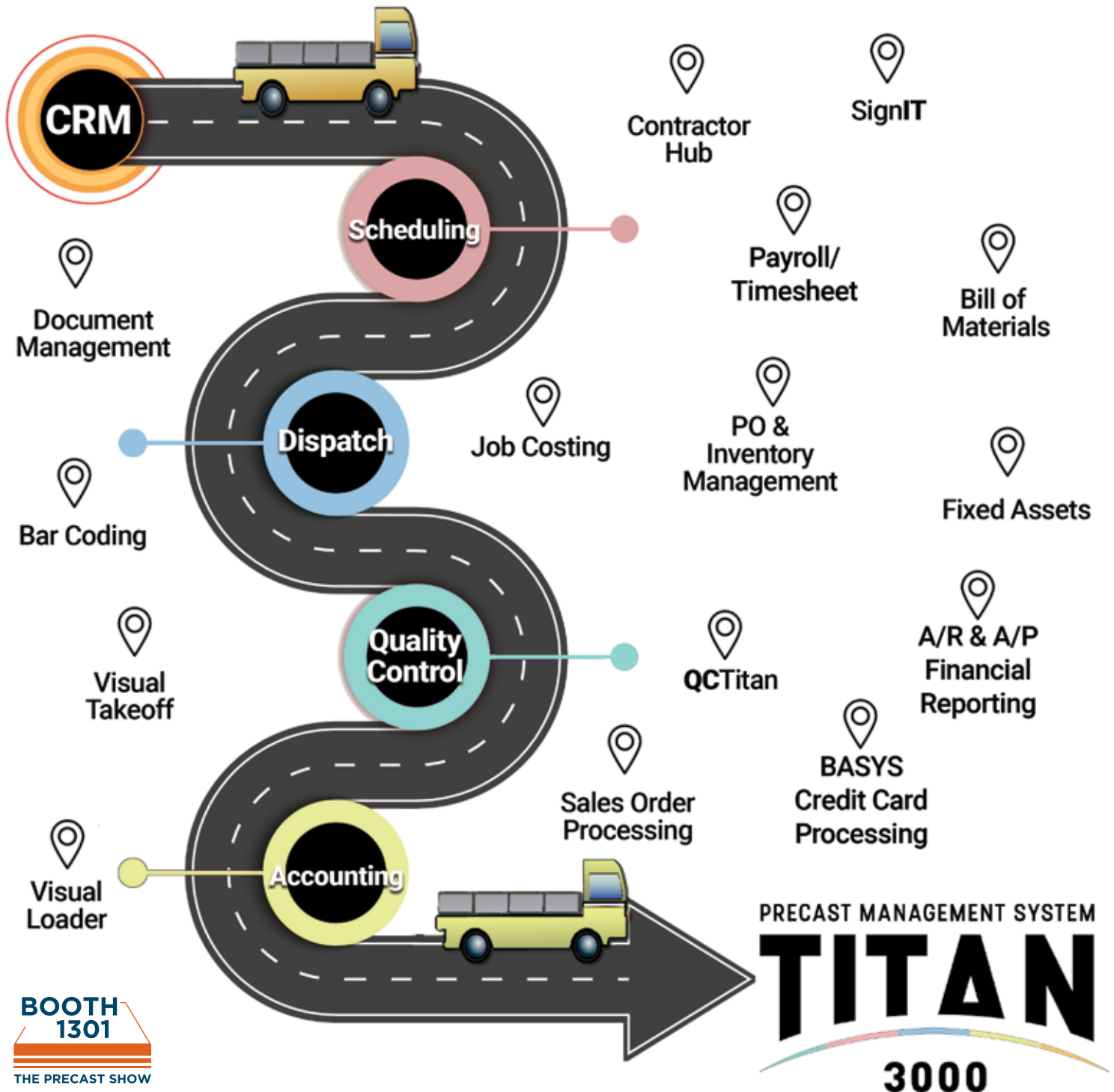
How precast concrete saved  
the day in a cliffside project





# Is Your Business Infrastructure Headed in the Right Direction?

**Titan Precast Management System is Your Roadmap to Success**



Learn more on our website or call us for a consultation

**titan3000.com • 732-866-8686**



# precast solutions

FALL 2021

VOLUME 19 | NUMBER 4

## ON THE COVER:

An evapotranspiration pond by Jensen Precast was lined and filled with soil to replicate a leach field as part of an aboveground septic system for the Horse Mesa Dam workers' camp in Arizona.

Photo courtesy of Jensen Precast

Precast Solutions  
(ISSN 1934-4066 print, ISSN 1934-4074 online)  
is published quarterly by NPCA,  
the association of the  
manufactured concrete products industry.

Material in this publication may not be reproduced without  
written permission from NPCA. Requests for  
permission should be directed to the managing editor.

© 2021 NPCA

## Publisher

Frederick H. Grubbe, MBA, CAE

## Executive Editor

Joe Frollo

## Managing Editor

Heather Bremer

## Technical Editor

Kayla Hanson, P.E.

## Technical Advisors

Philip Cutler, P.E.

Claude Goguen, LEED P.E.

## Graphic Designer

Deborah Templeton

## Advertising

Brenda C. Ibitz

(317) 571-9500

bibitz@precast.org

## NPCA

## Precast Solutions

1320 City Center Dr., Suite 200

Carmel, IN 46032

(800) 366-7731

(317) 571-9500 (International)

Email: npca@precast.org

*Acceptance of advertising does not imply NPCA's endorsement of the product. NPCA reserves the right to reject advertising copy and does not accept responsibility for the accuracy of the statements made by advertisers.*



This publication is designed to provide accurate and authoritative information in regard to the subject matter covered; however, National Precast Concrete Association and Precast Solutions act as mediators without approving, disapproving or guaranteeing the validity or accuracy of any data, claim or opinion appearing herein. Information is provided and disseminated with the understanding that National Precast Concrete Association and Precast Solutions are not engaged in rendering engineering, legal or any other professional services. If engineering, legal or other professional assistance is required, the services of a competent professional should be obtained. National Precast Concrete Association and Precast Solutions do not assume and hereby disclaim liability to any person for any loss or damage caused by errors or omissions in the material contained herein, regardless of whether such errors result from negligence, accident or any other cause whatsoever.

# WHAT'S INSIDE

## Specifier Q&A

4

In this issue, Precast Solutions hears from Luis Garza with Houston Public Works.

## Once in a Generation

6

Precast concrete, bolstered by a \$1.2 trillion infrastructure bill, can put the United States and its deteriorating roads, bridges and wastewater systems on the fast track to resilience.

By Joe Frollo

## Living on the Edge

12

A small footprint, limited access and rocky, cliffside terrain presented significant challenges in placing precast evapotranspiration ponds near Horse Mesa Dam.

By Bridget McCrea

## A Proven Solution: Precast Concrete Gravity Grease Interceptors

18

Kistner Concrete Products manufactures a massive gravity grease interceptor to serve growing meal program provider Nutrition 95 in western New York.

By Mason Nichols

## Par Excellence

22

Unit Precast fast-tracks an on-site wastewater treatment plant for a private golf course while battling brutal cold and space constraints.

By Shari Held

# Specifier Q&A

## Luis Garza, P.E.

Engineer, Standards and Specifications, at  
City of Houston Office of the City Engineer

Photos courtesy of Houston Public Works



Luis Garza

### What is your background and area of expertise?

I am a structural engineer licensed in the state of Texas. I have a varied experience that includes work in the building, offshore oil and gas, and transportation industries.

### What types of projects do you typically oversee?

I work for the city of Houston as an engineer in the Standards and Specifications Group located within Houston Public Works. I supervise updates to the city's design and construction standards and specifications. That entails updating the city's infrastructure design manual, general conditions, standard construction specifications and standard details. These documents communicate the city's requirements to engineers and contractors for most of the public infrastructure that is designed and constructed within the city right-of-way.

### How does the city of Houston update those documents?

The city has a review committee composed of members representing different service lines across the city, such as the Capital Projects (CP) and the Transportation and Drainage Operations (TDO) service lines. The committee reviews proposed updates submitted by the public and proposes updates based on lessons learned from past projects. Updates are vetted through internal and external stakeholders and solidified internally before final implementation.

### How did you first become interested in the job you now have?

I am a native Houstonian. I became interested in this job principally to give back to the city. I saw this role as a chance to use my engineering experience and expertise to improve the city standards and repay the community that has given me so much.







Photo courtesy of City of Houston

Workers install a precast box culvert section for a stormwater application in Houston. Recent projects in the city included overhauling the city's stormwater manhole standard details and replacing brick with precast concrete.

### What are some of the unique or noteworthy projects on which you worked with precast concrete?

The group I'm in recently partnered with the city's Storm Water Maintenance Branch, which is a part of the TDO service line, to overhaul the city's stormwater manhole standard details. The city's brick manhole standard details were decades old, and those brick manholes were difficult to maintain. We worked together to retire those brick manholes standard details and replace them with precast concrete manhole standard details. This initiative led to updates to existing engineering design requirements and construction specifications so they could work in conjunction with the new standard details. As a part of the external vetting process, the National Precast Concrete Association's (NPCA) aid in improving our standards and specifications was instrumental to this endeavor. Additionally, the help we received from our partners at the local and the state level was invaluable.

### Why is the city turning to precast concrete manholes?

The city is moving away from brick manholes and turning to precast concrete manholes for stormwater application because of their reliability. The city has faced challenges dealing with the consequences of infiltration and exfiltration in brick manholes, which compounds maintenance efforts. Quality control requirements associated with fabrication and construction of

precast concrete manholes reduce maintenance concerns and increase the longevity of this type of infrastructure.

### How do you see the future of precast concrete as a building material?

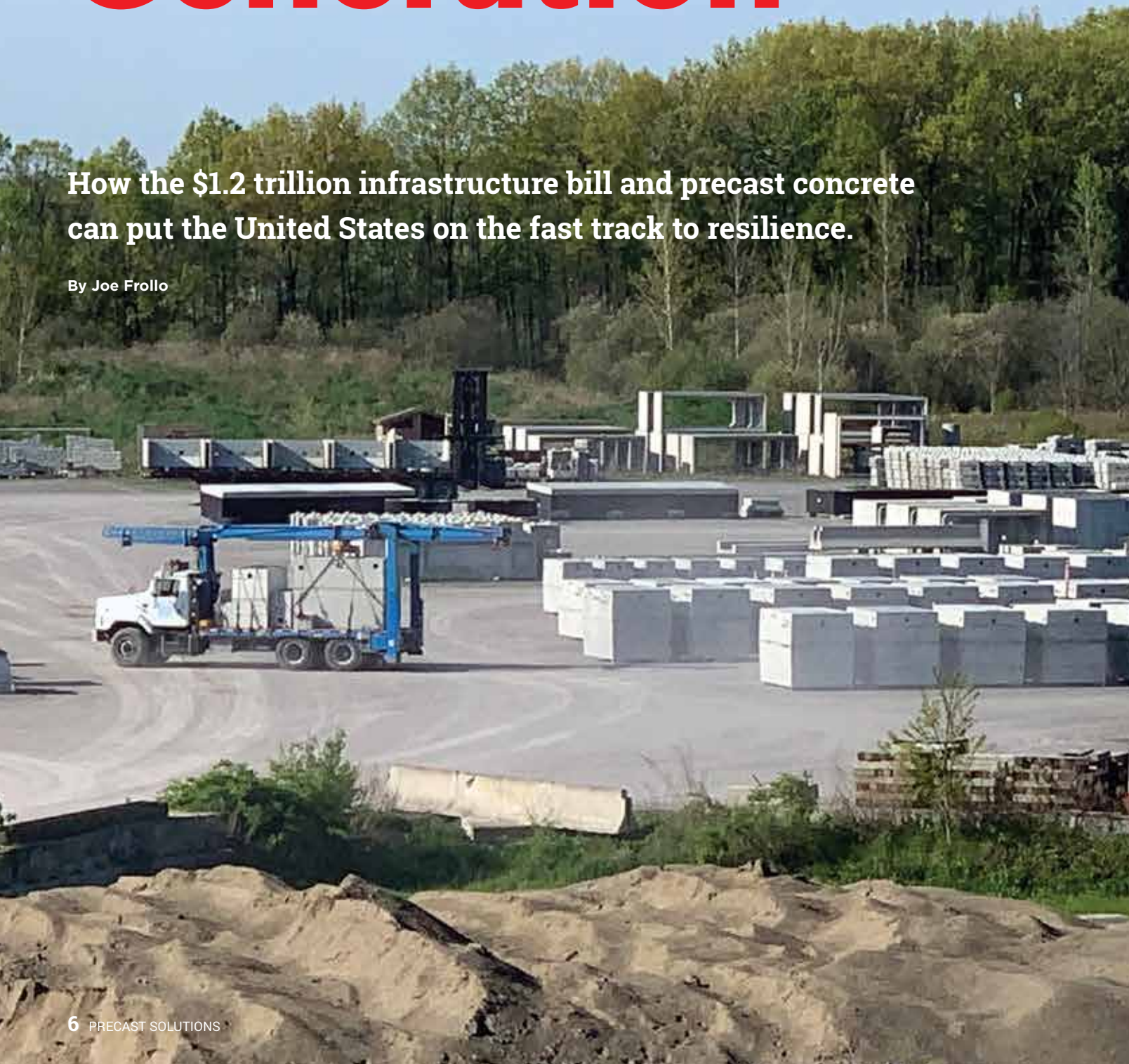
Precast concrete elements are common across Texas' public infrastructure. The material's resilience, product availability and longevity make it ideal for public infrastructure use. If the past is an indication of the future, I see precast concrete building materials continuing to be a mainstay of Houston's public infrastructure in the future. **PS**



# Once in a Generation

**How the \$1.2 trillion infrastructure bill and precast concrete can put the United States on the fast track to resilience.**

By Joe Frolo





American infrastructure was built to endure. But nothing lasts forever.

As state and federal officials consider how to administer the most significant infrastructure investment in American history, much of the news coverage focuses on roads, bridges and rail. The majority of U.S. wastewater systems, however, also are nearing a half-century of use at maximum capacity and will be a key part of any major civil investment.

According to the American Society of Civil Engineers (ASCE) Infrastructure Report Card, the 16,000 wastewater treatment plants across the United States, on average, are at 81% of their design capacities, while 15% are exceeding it.

And with expanding urban areas expected to accommodate even larger population numbers each passing year, the stresses on those systems only increase.

Rural areas have issues to address as well. Approximately 20% of Americans rely on local on-site wastewater systems that include septic tanks. While many large, urban wastewater treatment plants were designed with a 40- to 50-year lifespan, smaller on-site systems often are designed with an average lifespan of 15 to 40 years, though they can last longer if properly maintained.

However, a 2021 National Association of Home Builders report estimated that median owner-occupied housing across the United States is 39 years old, and with no concentrated records of how often homeowners replace these systems, there is no way to know how significant the needs are to address on-site wastewater infrastructure.

With \$55 billion of the \$1.2 trillion infrastructure package budgeted for water and wastewater projects, it is imperative that specifiers target resilient materials such as precast concrete. Funds will move quickly as projects are identified and prioritized. Utilizing precast concrete within these projects will help cities, states and municipalities maximize their dollars not just because of its durability but also for its adaptability to different conditions.

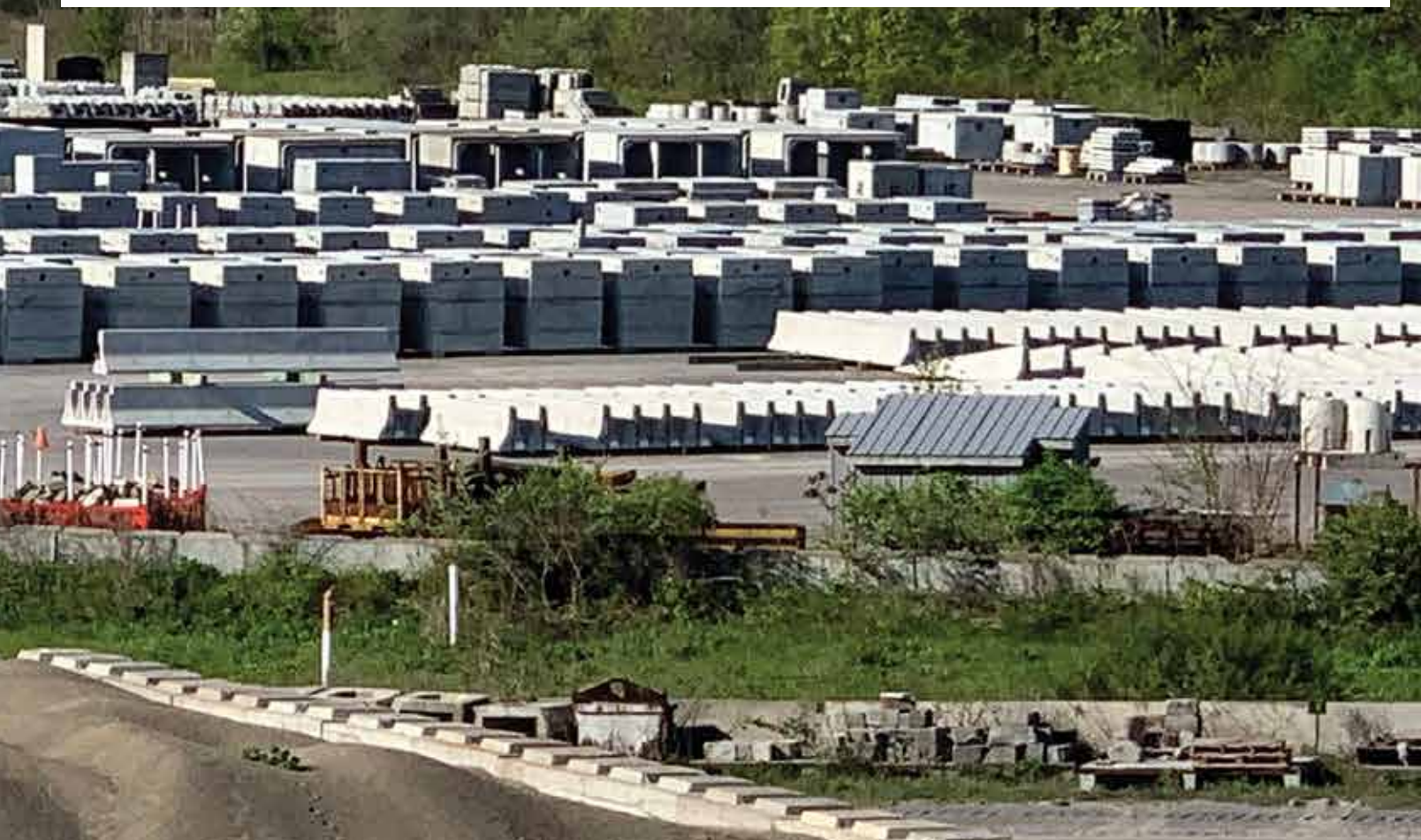
Precast concrete creates resilient infrastructure. It is strong. It is durable. It has a long service life. It stands up to natural and man-made disasters. Precast producers must meet this once-in-a-generation funding with a concerted, industrywide effort to demonstrate why precast concrete is the No. 1 option for projects that must be built to last.

## **‘DO IT RIGHT’**

Leadership sets the tone within organizations, but it is the workforce that ensures quality and craftsmanship with every job.

At Concrete Pipe & Precast, the company has a simple slogan for 2021 to reinforce its approach to infrastructure projects: Do it right.

“The thing that needs to separate us from not just other precasters but from people who work with other materials is that we do it right the first time, and that precast lasts a long time,” said Scott Crumpler, senior manager of QA/QC for Concrete Pipe & Precast in Ashland, Va.



“That end quality combined with concrete’s inherent durability is what will set our industry apart.”

Success as an industry requires diligence and trust between not just producers and specifiers but between fellow producers as well.

Frank Bowen is the business development manager at Jarrett Concrete Products & Supply in Ashland, Tenn. He eagerly awaits the opportunities that are coming.

With precast concrete’s intrinsic qualities and the attention to detail within facilities, precast concrete is in a strong position to take on a generational challenge.

“It’s not like, ‘Well, if we mess up, this money will come around again in three, four, five, 10 years to fix it,’” Bowen said. “Every job that goes out has to be built to last. Those are the benefits of concrete. That’s why someone uses it.”

## AMERICA’S AGING INFRASTRUCTURE

ASCE represents 150,000 civil engineers in private practice, government, industry and academia. Every four years, the association assesses the state of U.S. infrastructure in 17 categories, assigning a letter grade to each area and offering solutions to fix the issues.

The 2021 report card gives the United States a C-minus overall. That sounds bad, but it marks the first time in 20 years the grade is up from a D or D-plus.

Among the individual grades is a D-plus for centralized wastewater systems.

“Our nation is at a crossroads,” the ASCE report states.

“Deteriorating U.S. infrastructure is impeding our ability to compete in the global economy, and improvements are necessary to ensure our country is built for the future. While we have made some progress, reversing the trajectory after decades of underinvestment in our infrastructure requires transformative action from Congress, states, infrastructure owners and the American people.”

Though large-scale capital improvements have been made to systems experiencing sanitary sewer overflows (SSO), efforts have slowed in recent years. As many treatment plants and collection networks approach the end of their lifespans, operation and maintenance will become more costly.

Within its report, the ASCE calls on all parties – from producers to engineers to politicians – to stress resilience and innovation in all projects moving forward. That includes building into the design the ability to withstand and adapt to the impact of natural and man-made disasters.

With innovation, the ASCE report states, infrastructure producers cannot be complacent to rely on what they’ve always done, and government officials can’t simply select the least expensive bid to invest for the future.

Sounds like a resume for precast concrete.

“Many roads and highways have been in place for 50 to 70 years, but repairs are done every couple of years,” Bowen said. “A lot of the city wastewater facilities are pushing 50 years, so whatever replaces that has to be built not just for today but for future generations as well.”

## WORKING TOGETHER AS ONE

Most precast facilities started as “mom-and-pop” organizations that produced septic tanks among other products. It is there that they worked with smaller, sometimes one-off projects.

As companies grew and expanded their service lines, many eventually moved on to handling the needs of major metropolitan areas.

Bowen has been part of everything from stocking manholes to a 6,000-gallon grease interceptor, so he’s seen both ends of the spectrum.

Jarrett will focus on securing some of the major contracts that come to Nashville and surrounding areas once the infrastructure bill’s funds are released. But Bowen sees plenty

**CARMEUSE**

**PREMIACAL**  
ENGINEERED MILLED LIMESTONE

salesinfo@carmeuse.com  
1-866-780-0974

**IMPROVE YOUR PRECAST CONCRETE MIXES**

- Increases early strength for faster form removal
- Improves workability and surface finish
- Better control over mix designs than Type IL PC
- More color consistency over other traditional cement replacements
- Reduces concrete costs and CO<sub>2</sub> footprint

To learn more or request a free sample visit: [www.carmeuse.com/na-en/premiacal-better-concrete](http://www.carmeuse.com/na-en/premiacal-better-concrete)



# NORWECO, INC.

## YOUR BUSINESS PARTNER

# ***norweco***<sup>®</sup>

*Engineering the future of water  
and wastewater treatment*



## NORWECO HAS EXPANDED



GROWTH AND  
STABILITY



TRUSTED  
PARTNER



QUALITY  
MANUFACTURING



LATEST  
INNOVATIONS

**GROW YOUR PRECAST BUSINESS!**  
**COME SEE US - SAN MARCOS, TX**  
**10/17-10/20**



## TODAY'S ANSWER FOR THE PROTECTION OF TOMORROW'S ENVIRONMENT

1-800-NORWECO email@norweco.com www.norweco.com



**BOOTH  
1234**

THE PRECAST SHOW



**MAX***SAVE TIME, SAVE MONEY,***INCREASE  
PRODUCTIVITY****BOOTH  
2505**

THE PRECAST SHOW

MAX developed the World's First battery powered rebar tying tool in 1993. Since then, MAX rebar tying tools have revolutionized rebar tying work in the precast industry. MAX's 200 R&D engineers have continued improving upon their proprietary technology, which led to the invention of the TWINTIER®, a dual wire feeding rebar gun. TWINTIER® technology allows the tools to tie 4,000 ties per charge, while delivering just the right amount of wire for greater productivity and cost savings. These innovative features make the TWINTIER® the most efficient rebar tier in the industry. Today, MAX manufactures a full line of rebar guns that can tie between mesh up to #9 x #10 rebar.



SCAN HERE TO  
SCHEDULE A  
DEMO



The MAX PPE Shield means that you can trust that our tools are engineered with your health and safety in mind. MAX pneumatic tools are lightweight to reduce the stress on the body that develops from working hard all day.

**TWINTIER®**  
RE-BAR-TIER®

MAX USA Corp. • 205 Express St. • Plainview, NY 11803 • U.S.A. • Phone: (800) 223-4293 • FAX: (516) 741-3272

**MAX USA CORP.COM**

**BOOTH  
1747**

THE PRECAST SHOW

## PENETRON ADMIX

### CRYSTALLINE WATERPROOFING ADMIXTURE

**SB** Non-pigmented Soluble Bags

**RP** QC: Red Pigment Optional

**1** DOSAGE RATE  
BAG PER YARD



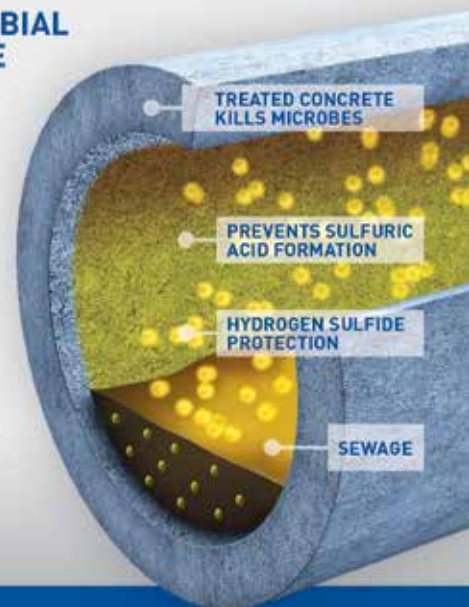
**PENETRON.COM**  
+1 631 941 9700

## PENETRON BioMIC SOLUTIONS

### ANTIMICROBIAL ADMIXTURE

Acidic  
Sewer  
Gas  
Protection

Kills  
**99.9%**  
of Bacteria



**PENETRON**





A septic tank is installed by Wieser Concrete Products. Precast concrete's exceptional strength, durability, resilience and long service life make it a top choice for both underground and above-ground infrastructure applications.



of work to go around, even for companies that aren't primary contract holders.

"This federal investment is going to be exciting," Bowen said. "And not just for us but for all of our precast competitors who honestly at this point I am considering our 'allies' in precast. I think there's the potential for all of us to be busy because cities, counties and municipalities are going to want to move fast once the money is available.

"I keep my forms as busy as I can, but there are only so many forms to go around. That's the same everywhere. Someone with some extra lead time may be able to pick up extra work. We are all planning for what's coming, but that's difficult when we are not 100% sure what to expect. We will need to be open to helping each other."

Planning will go hand-in-hand with execution, Crumpler said. And everyone from the corner office to the front lines are in this together.

"It is my personal philosophy that in the end, everyone is in sales," Crumpler said. "It doesn't matter if you are in quality control, production, marketing, administration, wherever, we all have an impact on how our product sells and how our industry is perceived." **PS**

*Joe Frolo is NPCA's director of communications and public affairs and editor of Precast Inc. magazine.*







# Living on the Edge

Precast concrete saves the day on a project where significant site constraints, bridge weight limits and a lack of surrounding soil make an aboveground evapotranspiration system absolutely necessary.

By Bridget McCrea

Situated about 65 miles northeast of Phoenix on the Salt River, Horse Mesa Dam is a 305-foot-high concrete thin-arch structure constructed in the 1920s. The dam forms a 245,138 acre-foot (just under 80 billion gallon) reservoir and includes an auxiliary tunnel, regulating gate, gatehouse and operating mechanism for controlling the tunnel.

Horse Mesa Dam also includes a camp that workers live at and operate from while working onsite. Constructed nearly a century ago, the camp's septic system was well past the end of its useful life. The camp also needed greater wastewater treatment capacity in an area where space was limited, difficult to access with a vehicle and situated on rocky terrain.

## A TEAM EFFORT

As the engineer of record, George Cairo Engineering reached out to Jensen Precast's Phoenix plant for help designing and building precast evapotranspiration ponds – which use the combined process of water surface evaporation, soil moisture evaporation and plant transpiration – to replace the camp's traditional septic system.

Because the site was mostly rock with very little soil, the team decided that an aboveground treatment system would best handle the wastewater flow. Rob Larson and Brian Hartsfield, both Jensen project managers, worked together with the engineering firm to nail down the details of the project.

"They really didn't have the luxury of doing a lot of excavation, digging or earth work in the area where the evapotranspiration ponds had to be installed," Hartsfield said. "So they had to build the ponds on top of existing ground."

Together, the two firms developed a design for three separate evapotranspiration ponds – one upper, one middle and one lower – that were manufactured at Jensen's plant and then installed on a hillside near the camp. Hartsfield said the design team decided on various configurations for the ponds because of the site's layout. A liner was put down first, and the ponds were filled with soil and other medium to replicate a leach field.

For the installation work, George Cairo Engineering recommended Scholz Contracting of Mesa, which ended up winning the bid.

"We hadn't worked in the area before, and the site was unique," said Jared Scholz, Scholz Contracting vice president. "I don't think anyone really had much experience working out in that extremely remote area."

## WORKING OFF THE SIDE OF A CLIFF

Jensen constructed the three new evapotranspiration ponds in three unique sizes and shapes with varying angles. The component pieces that were used to create the ponds had to be small enough for a contractor to get them down a hill and set in place with very little equipment and a small vehicle. Unable to

**Polylok wastewater products...**  
*a septic tanks best friend!*



**BOOTH  
1323**  
THE PRECAST SHOW



Polylok, Inc. has been at the forefront of effluent filter and onsite wastewater technology for over 35 years. With an extensive line of effluent filters, septic tank risers and covers, filter and tank alarms, safety devices, distribution boxes, and an array of onsite wastewater accessories, we are your one stop shop for all your septic tank needs. Trust the company that experts and professionals have trusted for over 35 years!



Visit our web site for our complete line of more than 200 onsite wastewater & drainage products.

**[www.polylok.com](http://www.polylok.com) / 1-877-765-9565**





An evapotranspiration pond is nestled on a cliffside near the Horse Mesa Dam workers' camp. Three such ponds now serve as the camp's leach field.

access the site with a standard tractor trailer, Jensen delivered the products to a staging area for the contractor, which then carried the pieces to the jobsite one or two at a time using a small truck.

"This isn't a typical jobsite," Hartsfield said. "To get to it, you have to take a long, winding dirt road down the side of a mountain."

Scholz concurred, adding: "We were basically working off the side of a cliff."

Complicating things further, the contractor also had to transport the ponds' pieces and their equipment over a bridge that has a 40-ton limit.

"We basically had to offload at the top of the mountain – which is about five miles from the site," Scholz said. "And then walk the equipment down to the site."





An evapotranspiration pond by Jensen Precast was lined and filled with soil and other filtration media to replicate a leach field.

The precast pieces built at Jensen and customized around these constraints were the clear choice for the project. Being precast, the pieces could be constructed in various sizes to ensure an accurate fit within the footprint.

“There were a lot of different sections and pieces, and each unique piece had a different SKU (stock-keeping unit),” Scholz said. “Getting all of that organized, scheduled, produced and out to the customer in the appropriate order was a major undertaking.”

Knowing that product weight and size had to be factored into the pond design, Jensen designed a solution that would work using available forms. The precaster decided to make L-shaped pieces using its existing box culvert forms, building bulkheads onto those forms to create the ponds’ L-shaped panels.

“This provided the versatility that we needed along with the structural engineering and design to support the approach that we wanted to use,” Hartsfield said. “This strategy allowed us to produce the ponds in small enough sections for the contractor to haul them down to the site.”

## PRECAST: THE ONLY CHOICE

Scholz said there were other reasons precast was the only choice for this project.

“There’s no way we could have taken a concrete truck down that hill,” he said. “These factors made precast the logical choice.”

Scholz coordinated closely with Jensen to ensure that the contractor could transport even the project’s largest precast pieces on trailers and handle them using smaller pieces of equipment.

Scholz said the contractor “really had to think through” the installation process for the ponds, each of which is situated at a different level on the land. The lower field is about 15 feet lower than the middle field, and the middle field is about 50 feet lower than the upper field.

“As we set them, we basically had to work our way out; there was no way to go back in after the fact,” Scholz said.

This required coordination of what beams the contractor needed first, the placement of those beams and having a good



# LET'S BUILD

# YOUR IDEAL STRUCTURE

**BOOTH  
2434**

THE PRECAST SHOW



REQUEST A QUOTE

**SUPERIOR**  
BUILDING SOLUTIONS  
FOR OVER  
**40 YEARS**

INDUSTRY-LEADING WARRANTIES  
ENERGY-EFFICIENT DESIGNS  
EXPERT CONSULTATION  
METAL AND FABRIC BUILDINGS

**ClearSpan**  
www.clearspan.com  
1.866.643.1010



plan on which beams needed to be placed where.

“All of these considerations had to be factored into the overall project strategy and timeline,” Scholz said.

## DURABLE, STRONG, VERSATILE

With the final stages of construction still underway on the project, both Hartsfield and Scholz say the early planning and coordination has paid off. Once the new evapotranspiration ponds are fully installed, they will operate as leach fields – with liquid flowing out of the septic tank and then into each pond for further treatment. With no soil in the area to use for a traditional leach field, the evapotranspiration pond is designed to capture all of the liquids from the wastewater. The liquid then is consumed by evaporation plus the vegetation and grasses that will be planted on top of the pond.

“Everything worked out well on the precast manufacturing side particularly in terms of using our existing box culvert framework to streamline the project,” Hartsfield said.

Precast provided the needed durability, strength and versatility to contain the camp’s new wastewater treatment system. **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.*



# A Proven Solution: Precast Concrete Gravity Grease Interceptors

**Kistner Concrete Products manufactures 20,000-pound, 2,000-gallon gravity grease interceptors for expanding prepackaged food operation in western New York.**

By Mason Nichols

**T**here is an allure in having a meal prepared for you. When someone else does the cooking, the most difficult decision typically is what to pick from the menu.

Dining out remains extremely popular in the United States. Even with the limitations owners and operators faced during the COVID-19 pandemic, the U.S. restaurant industry still ended 2020 with more than \$650 billion in sales.

Americans love to eat. And we love it even more when there is no stress, mess or work involved.

What most do not realize is that, for any food service operation – including restaurants, caterers and meal subscription companies – there's a lot going on behind the scenes to get food from the kitchen to your plate or home.

A key step in the process is the grease interceptor, a piece of equipment designed to remove fats, oils, greases and other byproducts generated during food preparation before graywater enters the wastewater treatment system. This ensures that wastewater meets acceptable effluent standards before being discharged into a sanitary sewer system.

Much like customers seeking dining establishments to simplify eating a meal, business owners in the food industry seek sanitary solutions that are up to code and make their lives easier by offering one less thing to worry about.

Precast concrete gravity grease interceptors (GGIs) fit the bill perfectly, providing the ideal combination of performance, strength, resiliency and ease of installation.



## PULLING THE PLUG

Meal kit delivery has become incredibly popular in the United States. Industrywide revenue is expected to grow to \$7.6 billion by 2024. While companies such as Hello Fresh and Blue Apron dominate the market, many others compete, including businesses with a more targeted focus.

In western New York, 95 Nutrition has developed a meal program that seeks to help customers with their weight loss goals by modifying their eating habits through portion control.

As part of 95 Nutrition's expansion efforts, the company sought to retrofit an office building in Amherst, N.Y., for food service operations. To adhere to state and town of Amherst plumbing standards, the facility had to include an exterior gravity grease interceptor to handle all food service waste. 95 Nutrition partnered with Kistner Concrete Products, an NPCA certified producer member in Lockport, N.Y., to manufacture and install a 2,000-gallon precast concrete GGI at the facility.

For about a decade, Amherst pre-treatment engineers and officials experienced severe issues with grease plugging major sanitary sewer arteries in the town, particularly during the holidays when large numbers of people would visit restaurants along major thoroughfares.

Mike Kistner, vice president of Kistner Concrete, worked with the town pretreatment engineer and helped revise the town specification to require GGIs, resolving the longtime problem. The change also effectively eliminated under-the-sink products, which had shown to be inefficient as a grease mitigation solution.

"Amherst is very progressive and at the front of the curve for requiring GGIs at every food service establishment," Kistner said. "By implementing this specification, they've totally eliminated costly and untimely sewer plugs."

## ORDERS UP FOR PRECAST

Depending on applicable standards, GGIs are manufactured using a variety of materials, including precast concrete, fiberglass and plastic. But precast concrete tanks generally are the preferred solution.

"None of the competitive materials possess the attributes precast has, including strength, durability and availability," Kistner said. "In addition to being economical and sustainable, precast gravity grease interceptors are locally manufactured and have an inherent capacity for handling traffic loading."

Such was the case for the precast GGI produced for Nutrition 95. Kistner Concrete manufactured the 2,000-gallon two-piece tank that is 12 feet long, 6 feet wide and 5 feet tall with a 4,000-psi concrete mix design. The structural design meets AASHTO HS-20 specifications, allowing for the tank to withstand highway traffic. Additionally, the Kistner Concrete GGI features a shoebox-style bottom with monolithic walls and baffle wall and a tank slab top that is sealed to the base using preformed flexible

# BIO-SAN® C500

## Antimicrobial Crystalline Technology

**NO  
EQUAL**



### Permanent Protection of Concrete in Severe Sewage Conditions

Xypex Bio-San C500 provides integral, permanent protection of concrete in harsh sewage conditions with high levels of H<sub>2</sub>S. Combining potent antimicrobial protection with Xypex Crystalline Technology, Bio-San C500 prevents microbial induced corrosion, stops infiltration/exfiltration of water, and provides acid and sulphate resistance, significantly extending the service life of concrete sewage collection systems and waste water infrastructure.

**1.800.961.4477**  
xypex.com





Kistner Concrete Products manufactured and installed a 2,000-gallon precast concrete gravity grease interceptor for Nutrition 95 in Amherst, N.Y. The entire installation took one eight-hour day.

joint sealant during on-site installation. Gasketed, resilient, watertight inlet and outlet pipe connections also are included in the design.

Kistner's company has been manufacturing high-quality precast concrete GGIs for decades. Because of the increasing need for these products across the region, Kistner Concrete makes sure the product is always in stock, allowing for a quick and easy installation for both business owners and general contractors. Product availability has been crucial for Kistner Concrete's tight-knit relationship with Kimil Construction, the contractor that performed the Nutrition 95 Amherst installation, as well as for Kistner's entire customer base.

Tanks are manufactured and inventoried at Kistner's manufacturing facility. Thanks to the ability of immediate delivery, once the order was placed, the installation process was straightforward. A specialized loading and unloading rig on Kistner Concrete's delivery truck loaded the GGI at the plant, delivered it and set the GGI into the excavation at the job site. Then Kimil Construction made the simple pipe connections into the watertight gaskets in the GGI, backfilled the tank and completed the work.

According to Nick Pfender, site foreman with Kimil Construction, the entire process took just one eight-hour day to complete. The most difficult part of the installation was

obtaining access to an adjacent property that the team needed to cross to deliver the tank. The actual truck setting and installation of the GGI took less than 45 minutes.

While some food service providers choose to select a plastic gravity grease interceptor in these situations, Pfender noted a few drawbacks with that approach.

"With the plastic products, you first have to pour a concrete pad that sits overnight," he said. "Obviously, you can't set the tank on wet concrete the same day. So then, you have a deep open hole that needs to sit overnight.

"In my experience, holes that deep and that big don't always hold up." It also poses a potential safety issue and extends the project duration.

Both Kistner and Pfender also noted the rising costs of plastic as another reason to opt for precast. By installing a precast concrete GGI, the customer receives a cost-effective solution that will last for decades to come.

## **RELIABLE, FLEXIBLE AND COST-EFFECTIVE**

Kistner was on the project site in Amherst during the installation. On the day of the work, he and Pfender talked about their collective effort.



“I said, ‘Hey Nick, how are we doing?’ and he told me, ‘You guys are great! I call you up, you bring your truck in when you say you will, and we install it. We’re in and out. That’s how we make money.’”

Because the installation process is streamlined, Kimil Construction quickly completed the work and headed to its next project.

“With precast, you know what you’re getting,” Pfender said. “It’s not going to leak, crumble, collapse or float. The products have been around so long that, as long as they are installed properly, they are proven to work.”

Pfender said that, when working with plastic, in some cases his team must make adjustments if everything doesn’t line up perfectly according to the project plans. In those situations, they cannot always be sure if the connections are watertight because of the need to drill or cut a hole during installation.

But with precast concrete, even if adjustments must be made, his team can create the necessary holes, then install resilient connectors to ensure watertightness. In essence, in addition to strength, resilience and cost-effectiveness, precast GGIs offer the flexibility that alternative products simply cannot provide.

## NOTHING BUT CONCRETE

To keep the food preparation industry running strong, precast concrete GGIs are the ideal choice. With resiliency, a long service life, strength, traffic-rated designs and a slew of other benefits, going with a precast solution just makes sense. Much like restaurants offer customers a chance to sit back, relax and enjoy a meal, precast GGIs offer business owners and general contractors alike an opportunity to focus on what they do best – serving their clients.

Throughout the years, this choice has become obvious for Pfender and Kimil Construction.

“If I had a choice, we would use nothing but precast concrete,” Pfender said. “I know what I’m getting, it’s faster to install and I know it’s going to last.” **PS**

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

### Endnotes

<sup>1</sup> <https://www.forbes.com/sites/aliciakelso/2021/01/26/the-us-restaurant-industry-finished-the-year-240-billion-below-pre-pandemic-sales-estimates/>

<sup>2</sup> <https://precast.org/precast-product/grease-interceptors/>

<sup>3</sup> <https://www.statista.com/topics/3336/online-meal-kit-delivery-services-in-the-us/>



**Join Us for a FREE NPCA Specifier Webinar!**

**Earn 1.5 PDHs**

**The Truth about Converting to Precast:  
Faster Schedules, Lower Cost, and Greater Resilience  
Date: Tuesday, Dec. 7, 2021 • Time: Noon-1:30pm EDT**

**Learn more and register at [precast.org/NPCAwebinars](https://precast.org/NPCAwebinars)**







# Par Excellence

**Despite many challenges, Unit Precast installs an on-site wastewater treatment plant in the dead of winter for a private golf course.**

By Shari Held

Photos courtesy of Unit Precast

**D**uring the summer months, celebrities flock to the Township of Muskoka Lakes, Ontario and scenic “Cottage Country.” The area is known for its upscale cottages, resorts and “Millionaire’s Row” as well as picturesque lakes, acres of lush green forests.

And golf.

According to Golf Inc. magazine, Ontario is home to more than a third of Canada’s golf courses, and golf is considered by many Canada’s No. 1 recreational sport.

Located in the township’s municipal seat of Port Carling

since August 1922, Muskoka Lakes Golf and Country Club has been offering its members a place to play tennis and golf, enjoy water sports and dine in a beautiful, tranquil setting. The private club features a waterfront clubhouse and a par 70, Stanley Thompson-designed 18-hole golf course.

In 2018, it was evident the club’s septic system was no longer adequate for its current needs, much less its future needs.

“The existing septic tanks and beds were both undersized and appeared to be nearing the end of their useful life, as evidenced by the build-up of biomass in the active beds,” said Mateusz





Lewandowski, former engineer for water infrastructure for southern Ontario-based Cole Engineering Group, now part of IBI Group.

In addition, the club planned to expand the clubhouse and increase its services. It was the perfect time to replace the septic system. From the beginning, the project was on a fast track. It was designed in 2018, approved late 2019 and completed in 2020.

“Projects don’t often happen that quickly,” said Scott Robinson, managing director for Unit Precast, based in Breslau, Ontario. Unit Precast fabricated the new precast concrete wastewater treatment system and installed the technical equipment for the project.

## THE WASTEWATER SYSTEM DESIGN

When it comes to on-site or decentralized wastewater treatment systems, several options exist, such as activated sludge, trickling filter and moving bed biofilm reactor (MBBR) process.



**The Clear Choice**  
**For Advanced Wastewater Treatment**



**WHITEWATER<sup>®</sup> DF SERIES**

**WHITEWATER DF: Aerobic Wastewater Treatment Units for Residential Applications**  
ANSI/NSF International Standard 40 Class 1 Certified  
**400-1,500 GPD**





**ECOPOD-N: Fixed Film Aerobic Wastewater Treatment Units for Residential Applications**  
NSF/ANSI 40 And 245 Certified  
**500-1,500 GPD**





**ECOPOD-D: FBBR Wastewater Solutions for Commercial and Decentralized Applications**

**1,500-100,000 GPD**

**BOOTH 1034**

THE PRECAST SHOW

**(800) 219-9183**

[www.deltatreatment.com](http://www.deltatreatment.com) • [info@deltatreatment.com](mailto:info@deltatreatment.com)

Delta Treatment Systems, LLC is a wholly owned subsidiary of Infiltrator Water Technologies • 9125 Comar Dr., Walker, LA 70785

# Biodegradable Form Releases

- Water Free
- Solvent Free
- Zero Vegetable Oils
- Exceptionally Clean Forms
- Exceptionally Smooth Surfaces

The Choice is

Clear



- Designed for All Mixes and Forms
- Environmentally and Worker Friendly
- Low Odor
- Low VOC Compliant
- Contains No Waxes or Silicones



STRONG

PRODUCTS INC.  
Biodegradable Releases

**BOOTH  
1801**  
THE PRECAST SHOW

877-868-5650 ■ [www.strongproductsllc.com](http://www.strongproductsllc.com)



RH2O North America, a designer and manufacturer of decentralized wastewater treatment systems located in Breslau, Ontario, designed an MBBR process for the Muskoka Lakes Golf and Country Club. It is a relatively new process that originated in Norway. At its core is a biofilm carrier media that optimizes biofilm growth to treat the wastewater. The media is self-cleaning, does not clog and is designed to never need replacing.

RH2O has manufactured MBBR wastewater treatment systems for commercial on-site plants since 2006 and has tailored the technology for optimal performance in the Canadian climate.

The MBBR biological process combines the benefits of the activated sludge and attached growth wastewater treatment processes. It can remove carbon and ammonia in a small footprint, which was important since space was tight for this project. The Muskoka Lakes Golf and Country Club also hosts private parties and weddings during the period between the peak season and the offseason. A typical septic bed is not designed to meet the demands of the club's kitchen during those events.

"The MBBR system would allow us to meet the Ministry of Environment, Conservation and Parks' effluent criteria, which is why it was selected," Lewandowski said.

The club's wastewater treatment system was custom designed for 32,000 liters of wastewater per day to serve the clubhouse, staff quarters and pro shop. The system was designed to treat higher-than-domestic-strength wastewater with influent up to 500 mg/L BOD5 (biological oxygen demand), 400 mg/L of TSS (total suspended solids), 100 mg/L TKN (total Kjeldahl nitrogen) and 10 mg/L of TP (total phosphorus).

The system also features a dissolved oxygen (DO) sensor to automatically adjust the aeration system and reduce energy costs. It has a programmable logic controller (PLC) control panel, which allows the settings on the wastewater system to be changed remotely. The mechanicals are housed in an exposed aggregate precast control building.

The wastewater treatment system consists of eight precast tanks:

- 1 8,000 IG (imperial gallon) flow equalization tank with duplex and vortex sewage pumps.
- 1 8,000 IG sludge storage tank.
- 1 2,400 IG pretreatment or primary clarifier tank.
- 2 3,000 IG bioreactor tanks for the MBBR processes.
- 1 3,300 IG clarifier tank for intermediate clarification process.
- 1 3,000 IG final clarifier tank.
- 1 3,000 IG final pump tank that pumps the effluent wastewater to multiple disposal beds.

## PRECAST: A GREAT FIT

With an MBBR system, the tanks can be made of precast concrete, fiberglass or polyethylene. The existing septic tanks were precast, and the club liked the way they had performed, but precast was the clear choice for this project for several other reasons, too.

"In this case, we had to fit the tanks in a very small footprint," Robinson said. "We could custom design the precast, whereas with fiberglass tanks we wouldn't necessarily have been able to fit them in this tight area."

Precast also proved to be a better solution because the tanks were placed around a steep slope. They had to be structurally sound. Precast not only is strong and durable but also more cost-effective than other materials.

Ultimately, it was the project's short time frame that made precast the most viable option.

"Precast tanks were selected because the golf course operates seasonally, and we could only complete the replacement of the septic system in the winter months," Lewandowski said. "The precast tanks provided a quick installation and ensured the quality of the buried tanks was not impacted by the weather conditions."

## A CHALLENGE-FREE FABRICATING PROCESS

Unit Precast manufactures CSA-B66-compliant precast concrete septic and holding tanks. CSA B66 requires a minimum concrete strength of 35 MPa, which is more than 5,000 psi.

"We make a self-consolidating concrete (SCC); that is typically more than double that value," Robinson said.

Unit Precast was able to use its standard steel molds with custom modifications for lid placement and inlet and outlet access openings.

The tanks ranged from 12 tons to more than 20 tons. The two largest tanks were made in three sections, whereas the six smaller tanks were manufactured in two sections. In all, Unit Precast fabricated the 18 elements for the eight tanks in only four weeks.

"Normally, with projects like this, once they're confirmed, we have around a six-to-10-week turnaround time," Robinson said.

## A CHALLENGING INSTALLATION

The tanks were transported 3 1/2 hours away with Unit Precast's crane delivery trucks and flatbed trailers. While the fabrication process was a breeze, the transportation process proved challenging. The winter weather made it difficult for the flatbed trucks to make it up the steep hill to the golf course.

Challenges began full force during the installation process, which started Dec. 16. One of the main challenges was the severe weather conditions. The frigid temperatures – at times, minus 30 Celsius – were brutal. That's minus 22 Fahrenheit!

# The Right Pump For The Job

Ashland Pump Effluent Line is the go to pump for installers who want "tough and reliable."



## Ashland

P U M P

1899 Cottage St. ■ Ashland, OH 44805

855 281-6830

ashlandpump.com

**PRECAST PROUD**  
NPCA MEMBER



With the wastewater treatment system located on the fairway of the first hole, Unit Precast was careful to leave a line of trees in place that shielded golfers' views of the plant.

"It was not only extremely cold, but we got tons of snow while we were doing the installation," Robinson said.

The sub-zero temperatures also were hard on the equipment and hydraulic lines. The butyl sealant had to be kept inside the trucks so it would stay warm enough to compress. Workers used torches to blow precipitation off of the tongue-and-groove connections prior to installation so the tanks would seal properly.

Almost as difficult were the space constraints. The wastewater treatment system is located on the fairway by the first green. On one side, the fairway is bordered by trees, and there is a steep hill to the left of the tree line. Ordinarily, the trees would be removed, but since the project was for a golf course, the trees had to be retained for both aesthetic and practical reasons.

"Golfers are all about picturesque scenery," Robinson said. "If they're teeing off on the first green and they see a sewage treatment plant, that's not an option. Preserving the trees was important to keeping that view of the treatment system hidden."

Great care was taken when accessing the job site, which also included a raised tee box. Sensitive construction measures were required to leave the golf course as pristine as possible.

Unit Precast used its HIAB knuckle boom cranes, which are attached to the company's delivery trucks, for the installation. Trying to maneuver a stand-alone crane in the tight space would have been difficult and would potentially cause more damage to the job site.

Despite the challenges, all eight tanks were installed in only two days. During the remaining two days, Unit Precast installed the technical equipment including pumps and piping inside the tanks and in the mechanical building. The system was fully installed and ready for backfill by Dec. 20.

"It was a difficult project with tight access and unfavorable weather. I was on-site and proud of our team's work," Robinson said.

Once the wastewater treatment system was installed, the old disposal beds, which also run along the fairway of the first green, could be replaced and additional beds installed to handle the increase in wastewater flow.

## A SATISFIED CUSTOMER

A year later, golfers at Muskoka Lakes Golf and Country Club cannot even tell that in winter 2020 the first green was the site of such a major project. The new MBBR wastewater treatment plant is working well, and the club is satisfied.

"We've been performing operation and maintenance on the system for over a year or so," Robinson said. "Everything's been meeting the performance requirements of the project." **PS**

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





BOOTH  
1627

THE PRECAST SHOW

# STRONGER, LONGER CONCRETE

CONSEAL'S COMPLETE SYSTEM OF PRODUCTS GIVES  
CONCRETE **WASTEWATER** SYSTEMS THE BEST CHANCE TO REACH A **100-YEAR LIFE SPAN**.  
ALL AT **1/3 THE COST** OF OTHER PROTECTION PRODUCTS.

## CONBlock TOPICAL

PENETRATING SEALER  
FORTIFIED WITH  
CONBLOCK MIC FOR  
DIRECT CONCENTRATED  
SURFACE PROTECTION  
AGAINST MICC.

## CONBlock MIC

A LIQUID ADMIXTURE THAT  
INHIBITS MICROBIAL  
INDUCED CORROSION OF  
CONCRETE (MICC) AND  
CEMENTITIOUS MATERIALS.



## CONBlock CDA

A LIQUID CONCRETE  
WATERPROOFING  
ADMIXTURE THAT  
DENSIFIES AND  
STRENGTHENS CONCRETE.

## CONSEAL CS-1800

COLD APPLIED,  
SOLVENT-FREE  
WATERPROOFING  
MEMBRANE.  
MEETS ASTM C636.

“CONBLOCK IS THE FUTURE!  
IT IS BACKED BY SCIENCE &  
SPECIFIED BY ENGINEERS  
FOR LONGER LASTING CONCRETE.”



**CONSEAL**  
CONCRETE SEALANTS INC.

SEAL THE FUTURE

“CONBLOCK IS DOMESTICALLY &  
INTERNATIONALLY PROVEN &  
TESTED USING ASTM C1898,  
ASTM C1904 STANDARDS & MORE!”

+1.937.845.8776

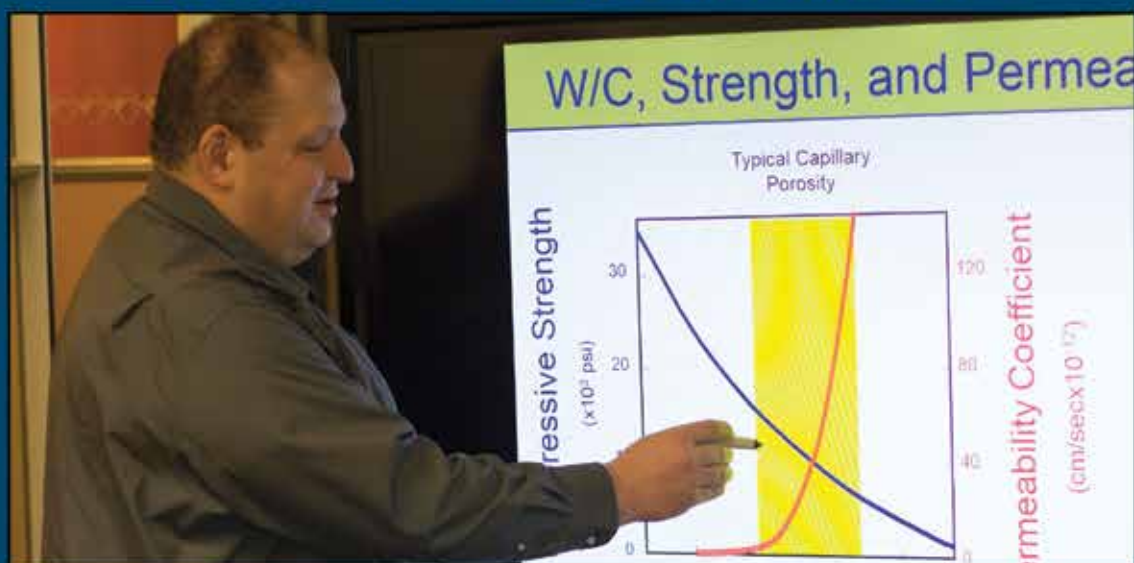
WWW.CONSEAL.COM

MICC@CONSEAL.COM



# NPCA's 2022 Monthly Webinar Series

## Now Available



NPCA's webinars are an excellent way to provide precast-specific training to your employees. The registration fee is per location, which means you can train all of your employees for the same low price. Registration gives you access to the live webinar and NPCA's entire online library of one-hour webinars for a full year. This provides you with access to the webinars at any time for additional employee training.

**All one-hour webinars are presented from noon to 1:00 p.m. Eastern time.**

**Here is a list of 2022 Monthly Webinar Series topics and links to their descriptions.**

Jan. 20	What You Need to Know When Creating an Employee Handbook	July 14	Making That Big Purchase: What You Need to Know About Large Capital Expenditures
Feb. 3	Applied Ethics in the Precast Industry	Aug. 11	Lean 101
March 17	Onboarding: Go from Employee Seeker to Employee Keeper	Sept. 8	Get Packing! We Are on a Quest to Better Concrete with Combined Aggregate Gradation
April 14	What You Need to Know About Precast Mixers	Oct. 13	AutoCAD Tips and Tricks
May 12	Identifying Mix Design Efficiencies	Nov. 10	Best Practices for Steel Reinforcement Fabrication, Placement and Inspection
June 9	Testing Fresh Concrete	Dec. 8	Increase Sales by Building and Enhancing Relationships

**Access to all 12 webinars is: \$785 for members • \$985 for non-members.**  
**Webinars also can be purchased individually.**

**Register at: [precast.org/webinars](https://precast.org/webinars)**