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A Publication of the National Precast Concrete Association [precast.org](http://precast.org)



# IN ANY WEATHER

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**SHEA CONCRETE PRODUCTS**

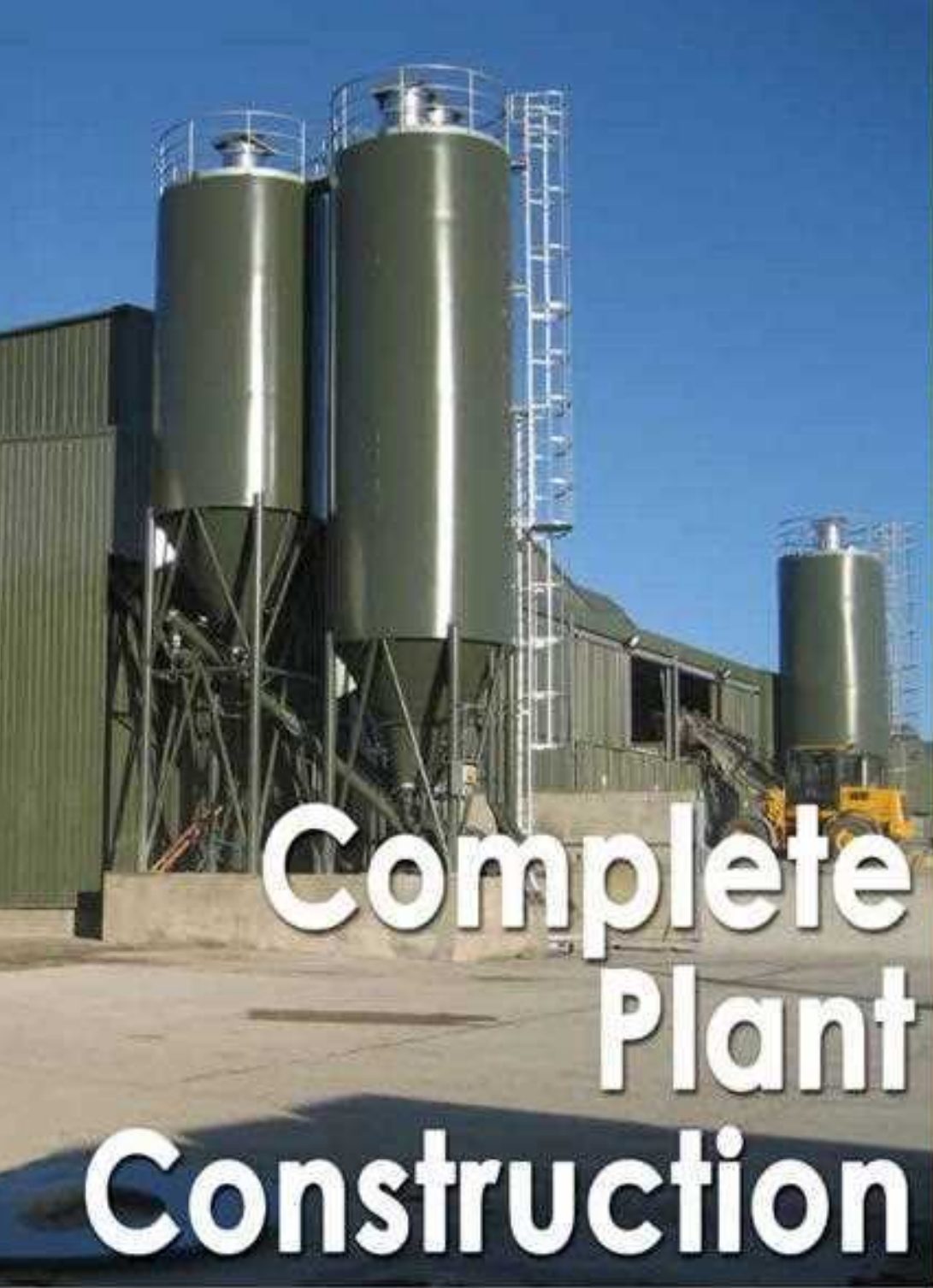
## Also in this issue:

How to Diversify Your Product Line – Part 1

Materials vs. Customer Expectations

What is alkali-silica reaction?





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# Can't Wait for Washington

BY BRENT DEZEMMER | *Chairman, National Precast Concrete Association*

If you are in the precast industry, you will likely be hearing the phrase, "Take a New Look at Precast" in the coming months as NPCA launches a new marketing initiative.

At the conclusion of the NPCA 48<sup>th</sup> Annual Convention – nearly two weeks into the government shutdown – the Capitol Steps comedy troupe took to the stage with a set of satirical musical sketches that skewered Congress and made great fun of the inability of our elected officials to get anything done. They were hilarious! But in the light of day – back at the plant – government paralysis in Washington, D.C., is serious business.

The good news, at least in some states, is that governors, mayors and the private sector are taking matters into their own hands, realizing that they can't wait for Washington to come up with a fix for the broken transportation funding scheme, and knowing they won't be seeing any major infrastructure rebuilding initiatives coming down from Capitol Hill anytime soon. Here are a few examples of things happening around the country:

- In Florida, a \$1.5 billion privately financed project would create a 230-mile rail link between Orlando, West Palm Beach, Fort Lauderdale and Miami.
- In Arkansas, voter-approved bonds and a half-cent sales tax increase will fund 112 projects to the tune of \$1.25 billion.
- In Ohio, lawmakers got tired of transportation projects that were languishing in limbo because of stagnating gas tax revenue and federal highway funds. So the Ohio Turnpike and Infrastructure Commission took a new approach, issuing \$1 billion in bonds that will fund projects outside the toll-road corridor for the first time. Ten projects will total \$930 million in highway and infrastructure improvements and create 65,000 jobs, according to the Cleveland Plain Dealer.
- In Los Angeles, the city increased taxes to fund a major new transportation network and a new airport terminal. Nobody likes a tax increase, but as Mayor Eric Garcetti said on one of the network morning talk shows, "We can't wait on the state or the federal government. We've got to do it ourselves."

I could go on. There are many examples of local solutions filling the vacuum created by inaction in

Washington. What does that mean for the precast concrete industry? It means that we need to emphasize one of the core principles we've been talking about for years at the National Precast Concrete Association: Get closer to your customer.

We've all heard the Tip O'Neill quote, "All politics is local." Well, that can be said about the precast concrete industry too. Whether you are bidding on public works or subbing for a privately funded commercial project with international backing or installing residential septic tanks, the relationships are often created and nurtured at the local level. So now is the time to look around your own back yard, reach out to your best customers and develop some new ones.

If you are in the precast industry, you will likely be hearing the phrase, "Take a New Look at Precast" in the coming months as NPCA launches a new marketing initiative. NPCA members will be adapting the "Take a New Look" campaign to their own marketing and sales plans while the association works on multiple fronts at the national level to persuade a wide variety of specifiers, engineers, architects, regulators, DOTs and the federal government to look into the nearly infinite possibilities of building with precast – both above-ground and underground. NPCA is getting closer to its customers too.

As the campaign gets off and running, we can also apply the message internally at our plants. We should all "Take a New Look at Precast." Are we reaching the specifiers we need to reach? Have we persuaded any of those customers to spec precast rather than another material lately? Have we positioned ourselves as the local expert in all things precast? Have we brought any new products on line in the past six months? Have we adapted to the new post-Recession economy?

Ready to find out more? Check out [precast.org/newlook](http://precast.org/newlook) and see the beginnings of the new high-tech, high-quality, highly innovative world of precast concrete. This is your first glimpse of what lies ahead for our industry, of how we will be "Building the Future" with precast! ■





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## PROFILE

# In Any Weather

Precise measurements and attention to detail are critical when manufacturing quality products in the precast concrete industry. For Shea Concrete Products of Amesbury, Mass., these facets of production were paramount in creating 42 precast concrete floating docks, which replaced an aging system in place at the seaport marina in Lynn, Mass.

Story by Mason Nichols

Photo by Stephen Chmielewski ([www.stevechmphoto.com](http://www.stevechmphoto.com))

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**Correction:** In the September/October issue of *Precast Inc.*, the upper left photo caption on page 24 should have read "Len and Michele Worden."

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*NPCA is a trade association representing the manufacturers of plant-produced concrete products and the suppliers to the industry around the world.*

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# Materials Certifications

Can you assure that the materials in your concrete products will live up to customer expectations?

BY EVAN GURLEY

One of the inherent benefits of precast concrete products is that they are manufactured in a controlled environment that eliminates most, if not all, of the quality issues that arise when casting a concrete product on site. Precast concrete has a great reputation for durability, strength, service life, watertightness and aesthetics that can be attained with a high level of consistency – as long as the proper quality assurance measures are in place and followed.

But quality doesn't mean a thing if the materials that go into the product are not what the design calls out. All materials – including the cement, aggregates, water, chemical admixtures and reinforcing steel – must be as the design calls for, or the integrity of the product may be jeopardized.

## Materials certification requirements

Every year, some of the most prevalent recurring deficiencies recorded by inspectors during an audit tie in with Chapter 2 of the NPCA Quality Control Manual for Precast and Prestressed Plants. While these sections currently are not “critical sections” in the NPCA QC Manual, they are critical in another sense.

Sections 2.1 & 2.2 – “Concrete” and “Reinforcement,”

respectively – of the NPCA QC Manual address minimum requirements for the materials that are to be used in the production of a precast concrete product (discussed below). Conformance to these minimum requirements, as well as the frequency of documentation and test report retrieval, are outlined in these sections. Without these documents and test reports outlining the conformance to specifications, you cannot be assured that the materials called out by the design will result in a precast concrete product that meets customer requirements.

## Minimum requirements for materials

### Section 2.1.7 Plant Requirements

1. The following documentation shall be maintained current in the plant records:

- Cement and supplementary cementitious material mill certificates
- Aggregate supplier and test reports
- Mix water potability test reports or other test records indicating the acceptability of the mix water (annually) unless using a municipal water supply

- Chemical admixture and other additive certifications (annually)
2. Documentation of conformance to ASTM C33 (excluding gradation testing) and test reports indicating that the aggregates are nonreactive and stable shall be maintained for each aggregate source used. Such documentation shall be obtained from the supplier, an appropriate state agency or a testing laboratory engaged by the plant, a minimum of once per year for each material used. The maximum aggregate size shall be proper for the products being cast.
  3. Records of incoming raw materials and plant materials tests shall be kept current and on file for a minimum of three years.

### Section 2.2.5 Plant Requirements

1. Mill certificates and certificates of conformance shall be maintained current for all reinforcement including reinforcing bars, reinforcing wire, bar mats, welded wire reinforcement and coated reinforcement (see the example in Figure 1).
2. The plant QC Inspector shall crosscheck that certificates are on file for all reinforcing heat numbers being used or stored.
3. Certificates shall be maintained in the plant records for a minimum of three years.

Alicia Kamischke, an inspector with Hanson Professional Services Inc. (HPS), NPCA's engineering inspection agency, addressed the top quality control problems for precast plants. "Many plants are missing material certification documentation, either mill certificates or annual letters," she said. "All plants I have inspected use materials conforming to the requirements of the NPCA QC Manual; however, sometimes the documentation is not current." Kamischke went on to state how plants currently meeting the minimum requirements described in the NPCA QC Manual address this issue. "Some plants set up a schedule or Outlook auto-reminders to regularly review or request certification documentation. This is especially true for the annual certificates that can be pulled from the manufacturers' websites. Plants will set a reminder for the first working day of the year and update all certificates for the year on Day 1."

### Precaster's insight

"One of the biggest issues we had last year was getting certifications from vendors stating that they conform to specifications," said one precaster. "You would think that your gravel and sand suppliers would just send you the proper certifications each year for your file, but every year we have to ask them to give us the letter, and it seems to be a big hassle each year."

One isolated incident started out as a minor problem but ended up being a major headache for the precaster. "We actually had one vendor who gave us mill certifications that did not match the steel he delivered. Unfortunately we did not catch it, but a DOT inspector did," he said. "All of a sudden, \$500,000 worth of product became unacceptable until we could get the proper certifications and prove that the material

used in our products was up to spec. The material in question was supposed to be A706 steel, and the real mill certificate had some ambiguous wording on it that the vendor claimed led him to believe that it was equivalent to A706. Unfortunately it was not, and it caused a lot of headaches. If our materials acceptance procedures were tighter, we would not have had the problem." In this case, the breakdown of the precaster's materials acceptance procedures led to realized costs.

### Corrective action

Various checks and balances can be implemented at a precast plant to ensure that the vendor is in fact supplying the correct materials, and that those materials are meeting a certain level of quality. Some plants opt to place their confidence in their supplier, and there have been no incidents or mishaps during their business relationship. This may work for some precasters and their suppliers, but it may not work for all. Either way, it is always beneficial to have a procedure in place that is documented in the plant-specific QC manual to verify that all incoming materials received meet the specifications and/or minimum requirements.

A plant may choose to simply review the mill certificates and documents it receives and perform a quick visual inspection for each shipment, or a plant may opt to have a more in-depth procedure in place to ensure that all materials match what was ordered. Whatever works best for the precast plant should be outlined in its plant-specific QC manual and enforced to ensure a product not intended for that project/job is not used.

One enterprising NPCA certified plant, Brayman Precast LLC in Saxonburg, Pa., has developed an in-depth receiving inspection and testing procedure at its facility to ensure that all materials received are up to specifications and the materials are what was ordered. In order for materials received by its vendor to be accepted, the plant adheres to the following checks and balances:

- All incoming raw materials shall be accompanied by appropriate material mill certificates, material certifications, and/or vendor inspection and test reports upon receipt and as stated in the purchase agreement.
- Acceptance of these materials is dependent on the compliance of the mill certificates and test reports with the applicable standards.

The plant then takes it a step further and performs additional checks of each type of material received. For example, its reinforcing (deformed bar and mesh) inspections use the following checklist:

- Mill certificates (epoxy coating certificates when applicable) reviewed and logged
- A visual inspection of incoming reinforcing for bar identification, surface condition, finish (plain or epoxy), and/or other visible bar deformities
- Reinforcing incoming inspection record filled out and turned in to the Quality Assurance manager
- The heat numbers by bar type and date received are logged



**BOOTH 1631**  
THE PRECAST SHOW

FIGURE 1: EXAMPLE OF A MILL TEST REPORT FOR WELDED WIRE REINFORCEMENT.

- into the incoming reinforcing log
- The reinforcing incoming inspection report and log are filed as part of the Quality Control records

The plant then marks all approved reinforcing bars and welded wire fabric, after having been subject to incoming material inspection and testing, with a green spray paint mark. All nonconforming incoming reinforcing bar and welded wire fabric are segregated from approved material storage and affixed with a red tag. Purchasing is notified of an incoming material nonconformance and then contacts the vendor. The plant stipulates that the material must not be used for production until the material's disposition is determined through coordination with the vendor and the purchase agreement.

As you can see, this plant does a thorough job on the front end to ensure that all incoming materials are what were intended, and if they are not, immediate corrective action is taken.

### Supplier's perspective

Nucor, the largest producer of steel in the United States, responded to an inquiry about what type of documentation it supplies with each shipment of steel, what type

of information it includes on the documentation and how a precaster can have a mill certificate re-created if misplaced:

- Mill certifications are created electronically from our main computer system.
- One set of mill certifications is printed at the time of shipment and travel with the steel.
- A second set can be sent electronically to the same order or another location (usually the billing address).
- Mill certifications that were created after Jan. 1, 2009, can be re-created given the correct information.

To ensure the steel/WWR has all the correct properties and is what was purchased, this information must be made readily available.

### Conclusion

It is ultimately the plant's responsibility to have a plan in place to ensure materials are true. If your vendors are not able to supply you with this critical information for every shipment, you could end up with a yard full of unacceptable inventory. ■

*Evan Gurley is a technical services engineer with NPCA.*



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FLY ASH COMES FROM COMBUSTED COAL, IN THE BACKGROUND, AND CAN BE TAN TO GRAY IN COLOR.  
*Photo courtesy of HW Headwaters Inc.*

# The Future of Fly Ash Use in Concrete

Fly ash, the largest industrial waste byproduct, has been beneficially recycled as a partial replacement for portland cement in major U.S. government projects for decades.

## Why is it currently a controversial issue?

BY SUE McCRAVEN

Most people on the street have no idea what fly ash is or how it is used. But for concrete manufacturers, fly ash and the current regulatory controversy spinning around it are a very big deal. After seven decades of beneficial use in concrete structures, the U.S. Environmental Protection Agency (EPA) is currently reassessing the classification, storage, disposal and reuse of fly ash to ensure that it is properly managed to minimize potential harm to human health and the environment.

Structural engineers, infrastructure builders, fossil-fuel power generators, environmental activists and the U.S. Federal Highway Administration (FHWA) are also invested in the ongoing debate over the EPA's recently proposed ruling to reclassify fly ash – after years endorsing its positive contribution to the concrete industry – as a hazardous waste. A balanced discussion

of the pros and cons of recycling fly ash (aka coal ash or CCP)<sup>i</sup> in concrete from a global perspective is in order. Let's start with the source of the massive amounts of fly ash: the world's electrical power industry.

### What is the main source of electrical power?

The No. 1 source of electrical generation has always been, is today, and likely will continue to be coal.<sup>ii</sup> And the burning (combusting) of pulverized coal generates electric power and tons and tons of powdery fly ash residue. Fly ash is captured with electrostatic precipitators, scrubbers or filter fabric baghouses in power plants, then sluiced to settling basins (wet) prior to disposal or stored in silos (dry) for sale or disposal. In our endless need for power, it makes sense that fly ash has become



the earth's largest industrial waste byproduct,<sup>iii</sup> but fortunately some of it is diverted for a good purpose. Indeed, certain classes of fly ash are an important component of reinforced concrete, the best composite structural material in the world.

### Major role of fly ash in concrete structures

Fly ash is a very fine-particulate material that looks and feels like talcum powder and can be a tan to gray color, depending on its source. It is classified as a pozzolan<sup>iv</sup> and with its high silica content is used by concrete producers as a component in the range of 10 to 25% of the cementitious portion of concrete mixtures. Fly ash forms calcium silica hydrate (cementitious material) in addition to that produced by hydration of portland cement.

Worldwide, concrete is used twice as much as all the other building products combined. Concrete is everywhere: in our bridges, roads, buildings, work places and neighborhoods. And underground, concrete foundations support our infrastructure.

Here's where the importance of fly ash in concrete becomes clear: More than 75% of all concrete is made with fly ash. In some states, fly ash is specified for all concrete structures. And the concrete industry is only one of the important entities using this abundant waste material.

### Other beneficial uses of fly ash

Fly ash production and its repurposing in various markets are quantified in data from FHWA<sup>v</sup> and EPA<sup>vi</sup> (see the sidebar "Fly Ash Reuse"). From these data, we see that the lion's share of recycled fly ash goes into making concrete, and the reason is because fly ash delivers measurable economic and structural benefits. Its worldwide availability, outstanding structural contributions (strength and durability) and relatively economical cost create a constant demand for fly ash in the construction industry.

Several NPCA publications explain fly ash in more technical detail, including its important environmental benefits, its material properties, chemical reactions and guidelines for production.<sup>vii</sup>



THE HUNGRY HORSE DAM, STARTED IN 1948 AND COMPLETED IN 1953, MARKED THE FIRST SIGNIFICANT USE OF FLY ASH IN CONCRETE. Photo courtesy of U.S. Bureau of Land Management

The following is a summary list of fly ash's contribution to concrete:

1. Increases ultimate concrete strength
2. Increases concrete durability
3. Is more economical than portland cement
4. Reduces the heat of hydration (first used in mass concrete construction in the building of Hungry Horse Dam, Montana, 1948)
5. Reduces risk of alkali-silica reaction (ASR)
6. Increases resistance to sulfate attack
7. Reduces concrete bleeding (water loss at the surface after placement)
8. Reduces concrete shrinkage during curing
9. Reduces the amount of water required in mixtures
10. Reduces permeability (increases concrete's resistance to water penetration)
11. Improves workability (microscopic, spherical-shaped particles create a more flowable, easier-to-finish concrete)
12. Lightens the color of concrete

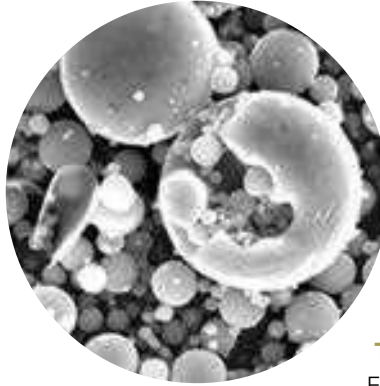
## FLY ASH REUSE

Fly ash is repurposed in various markets including concrete production. The American Coal Ash Association (ACAA)<sup>xiv</sup> is the source for EPA's fly ash data. Keep in mind that only about 30 to 35% of total fly ash generation is purchased or diverted for beneficial reuse. Most of the world's supply of fly ash, unfortunately, is destined for already-overburdened landfills.

(FHWA) Fly Ash Reuse Categories	(FHWA) Fly Ash Reused/ Recycled Million Short Tons	(FHWA) Fly Ash Reused/ Recycled %
Cement/Concrete	13.40	60.9
Flowable Fill	0.80	3.7
Structural Fills	3.21	14.6
Road Base/Sub-Base	1.02	4.7
Soil Modification	0.74	3.4
Mineral Filler	0.11	0.5
Mining Applications	0.82	3.7
Waste Stabilization/ Solidification	1.44	6.3
Agriculture	0.02	0.1
Miscellaneous/Other*	0.45	2.1
(FHWA) Totals	22.00	100
EPA [ACAA Source] 2008 Total U.S. Fly Ash Production Million Short Tons	(EPA) Total Fly Ash Reuse/Recycled (All Categories) Million Short Tons	(EPA) Fly Ash Reused/Recycled In Cement/Concrete Million Short Tons (%)
72.5	30.1	12.6 (42)
Coal Power Industry Data Totals	50+	45% (All Uses)

\*Roofing and wallboard

- 13. Fulfills LEED points (LEED MR 4.1, Reclaimed Materials/Recycled Content) and is routinely specified on many green projects
- 14. Meets the guidelines of many building codes, design guidelines and standards that encourage fly ash recycling in concrete.
- 15. Meets ASTM standards and test methods (ASTM C618-08, C1240 and C 311-07)<sup>viii</sup>
- 16. Is environmentally beneficial<sup>ix</sup>.



MICROSCOPIC VIEW OF FLY ASH. *Photo micrograph courtesy of HW Headwaters Inc.*

As we'll see, it was an unfortunate event in 2008 that gave the EPA good reason to reassess its position on fly ash.

### The best laid plans ...

EPA's sudden change of heart is the result of a massive slurry spill at The Tennessee Valley Authority's (TVA) Kingston plant in 2008. Failure of Kingston's coal ash retention basins resulted in serious local flooding and the pollution of 300 acres including the Clinch and Emory rivers. Consequently, the EPA reassessed its fly ash management position and proposed a new ruling that, for the first time, would regulate waste storage and disposal from coal-fired power generators.

EPA is currently considering two management options for CCPs. Both options fall under the Resource Conservation and Recovery Act (RCRA). One option would list CCPs (stored in settling basins or slated for landfill disposal) as special wastes subject to regulation under subtitle D of RCRA. In the second proposal – a ruling that the concrete, power and coal ash industries dread – the EPA would regulate CCPs under subtitle C of RCRA and classify fly ash as a hazardous waste. A long-awaited final ruling is expected in 2014. EPA also proposed a ruling to establish standards for wastewater management at power plants.

### Concrete arguments from ACAA

Opposition to listing fly ash as a hazardous waste is based on the economic, environmental and market concerns of producers and associations representing concrete, electric power and CCPs. Thomas H. Adams, executive director of the ACAA, has extensive experience in the concrete industry and is a strong proponent for the continued recycling of fly ash. Adams says, "On Dec. 22, 2008, the EPA decided to re-examine its 1993 and 2000 determinations that coal ash did not warrant management as a hazardous waste for disposal purposes. The mere suggestion that fly ash and other coal combustion products would be viewed as hazardous waste has had a chilling effect on those who have come to recognize the value of fly ash in enhancing concrete durability. A hazardous waste label would create significant issues. This stigma continues to linger with the regulatory uncertainty created by the EPA."

Some federal legislators aren't waiting for the 2014 ruling. House Bill H.R. 2218 would establish minimum federal requirements, administered by states, for the management of fly ash to protect human health and the environment. The bill passed the House in

### Opposition to fly ash

Environmentalists and the EPA are opposed to the wet handling of fly ash (storage of waste CCP slurry in holding ponds) at power plants because of potential violations of The Clean Water Act. A recent report<sup>x</sup> by a coalition of environmental organizations includes this statement from the EPA:

*"Coal-fired power plants are the largest source of toxic water pollution in the United States based on toxicity, dumping billions of pounds of pollution into America's rivers, lakes and streams each year.<sup>xi</sup> The waste from coal plants, also known as coal combustion waste, includes coal ash and sludge from pollution controls called 'scrubbers' that are notorious for contaminating ground and surface waters with toxic heavy metals and other pollutants."<sup>xii</sup>*

But it wasn't always this way. Opposition to fly ash is relatively new for the EPA. Prior to 2008, the EPA actually promoted the beneficial use of CCP (including fly ash) in its C<sup>2</sup>P<sup>2</sup> Program, a cooperative partnership with ACAA and USWAG:<sup>xiii</sup>

*"Fly ash is a CCP possessing unique characteristics that allow it to be used ton-for-ton as a substitute for portland cement in making concrete. Through the reuse of fly ash, the GHG emissions associated with the production of portland cement are avoided."*



THE I-35 BRIDGE NEAR MINNEAPOLIS IS AN EXAMPLE OF A LARGE GOVERNMENT PROJECT THAT WAS CONSTRUCTED WITH FLY ASH. *Photo by Jim Kruger, istockphoto.com*



July and was sent to the Senate, where its status is uncertain.

### What is the future for fly ash?

It should be noted that environmentalists' concerns about potentially toxic water pollution (particularly mercury) have no relevance to the use of fly ash in concrete production. The mercury level in most fly ash is the same as that found in most virgin soils. Further, if CCPs are high in mercury (mercury has an affinity for carbon), its carbon content would make it unsuitable for concrete. EPA's main concern with fly ash has been certain unlined landfills and specific massive earth fills. Failures of fly ash settling ponds, like the 2008 TVA spill, are extremely rare events, and in any case, only dry fly ash is used in concrete – not wet material in settling ponds. And lastly, the EPA has not indicated any desire to restrict fly ash use in concrete.

After seven decades of reducing the environmental impact of portland cement production and providing a means of recycling industrial waste, fly ash and concrete stand strong together. ■

*Sue McCraven, NPCA technical consultant and Precast Inc. technical editor, is a civil and environmental engineer.*

### Endnotes

<sup>i</sup> Coal Combustion Products (CCP) include fly ash, bottom ash and flue gas desulfurization solids. Fly ash is also called CCR (Coal Combustion Residuals).

<sup>ii</sup> Coal currently provides 40% of the world's electricity needs. It is the second source of primary energy in the world after oil, and the first source of electricity generation. Since the beginning of the 21st century, coal has been the fastest-growing global energy source. The last decade's growth in coal use has been driven by the economic growth of developing economies, mainly China. Source: [www.iea.org/topics/coal](http://www.iea.org/topics/coal)

<sup>iii</sup> "Coal-fired power plants produce huge amounts of fly ash and generate the world's largest quantity of industrial solid wastes, creating severe waste disposal problems." *Recycling of Waste Fly Ash: A Rheological Investigation*, by M. Sharma, C. Guria, A. Sarkar and A.K. Pathak. *International Journal of Science, Environment & Technology*, Vol. 1, No. 4. 2012. p. 285.

<sup>iv</sup> A pozzolan is a siliceous and aluminous material made up of very finely divided particles; when pozzolans are mixed with lime and water, they react to form a strong cementitious product, essentially slow-hardening cement.

<sup>v</sup> Source: FHWA Fly Ash Facts for Engineers, April 2011.

<sup>vi</sup> [www.epa.gov/epawaste/conservation/tools/warm/pdfs/Fly\\_Ash.pdf](http://www.epa.gov/epawaste/conservation/tools/warm/pdfs/Fly_Ash.pdf)

<sup>vii</sup> "Using Fly Ash in Concrete" by Arnie Rosenberg, May/June 2010 Precast Inc.; "Ultrafine Fly Ash" by K. Foody, May/June 2010, *Precast Inc.*; "Fly Ash: A Hazardous Material?" by C. Goguen, P.E., LEED AP, Precast Inc., July/Aug 2010; "If You Use Fly Ash in Your Mix, You Need to Read This!" NPCA Staff, Oct/Nov 2010, *Precast Inc.*

<sup>viii</sup> ASTM C618, "Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete"; ASTM C1240, "Standard Specification for Silica Fume Used in Cementitious Mixtures"; and ASTM C311, "Standard Test Methods for Sampling and Testing Fly Ash or Natural Pozzolans for Use in Portland-Cement Concrete"

<sup>ix</sup> By replacing cement, fly ash reduces energy and greenhouse gas emissions from cement clinker production and significantly reduces industrial waste destined for landfills.

<sup>x</sup> "Closing the Floodgates: How the Coal Industry is Poisoning our Water and How We Can Stop It," authored by a coalition of environmental organizations, July 2013.

<sup>xi</sup> EPA, *Environmental Assessment for the Proposed Effluent Limitation Guidelines and Standards for the Steam Electric Power Generating Point Source Category 3-13* (April 2013) [hereinafter, EA].

<sup>xii</sup> EA 3-34, 3-38.


<sup>xiii</sup> Utility Water Act Group


<sup>xiv</sup> <http://www.acaa-usa.org/>

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# Is Your Website OVERDUE for an OVERHAUL?

**Three NPCA members discuss their website strategies and show how to leverage an online presence into an effective sales and customer service tool.**

BY BRIDGET McCREA

Shea Concrete of Amesbury, Mass., has had an online presence since 2000. Every three to five years or so, the company takes a close look at its website, checks out the “latest and greatest” online technologies currently in use, and then figures out how to incorporate those tools – like social media, online video and other options – in a way that effectively meets the needs of its prospects and existing customers.

Greg Stratis, manager, says Shea Concrete’s most recent website upgrade was unveiled in January. He says the underlying goal of all site upgrades is to keep the company’s online presence fresh, relevant and useful for visitors. To achieve that goal, the company regularly makes slight changes to its online presence, typically on a quarterly basis. “This also helps our site move up the ranks with the search engines,” Stratis points out.

Shea Concrete’s most recent site overhaul included changes

to the menu structure, better mobile enablement (to ensure that users on “small screens” can interact with the site), a more user-friendly interface, and improved navigation capabilities for the firm’s three primary target areas: engineers, contractors and homeowners. The company – whose original website was developed in-house – contracted with a third-party marketing firm (which also handled the company’s 2008 website overhaul) to complete the upgrade.

Stratis says the process went smoothly. “We’re at the point where I just send the designer a little bit of information about a product or project, and they are able to run with it,” says Stratis, who also sits down face to face twice a year with the vendor to go over the company’s marketing plan. “This meeting helps to make sure we are all on the same page.” For example, while Shea Concrete’s previous site was jam-packed with information, that content wasn’t necessarily optimized for search engines like



Google. Additionally, Stratis says making the site mobile- and social networking-friendly were top priorities during the most recent site upgrade.

“Our last site wasn’t iPad- or mobile-friendly, and social networking wasn’t being used much back in 2008,” says Stratis.

“Today, both of these tools have become extremely important for manufacturers that want to ensure their websites are up with the times and relevant.”

Stratis says those efforts have paid off for Shea Concrete, which receives a daily flow of requests from new customers via its website. “On a weekly basis, I would say we average about five to 10 homeowners, two to three engineers, and one to two contractors,” Stratis explains. “Our database from forms submitted on our website has grown to around 2,500 contacts (including homeowners, engineers and contractors) in the past five years. That’s pretty significant.”

### Show your true colors

## “IF YOU’RE NOT PUTTING YOUR COMPANY’S PRODUCTS, INFORMATION AND MESSAGE OUT THERE, YOU’LL MISS OUT ON A BOOMING MARKET!”

— Cyndi Glascock

Studies show that it only takes a fraction of a second for a visitor to develop his or her first impressions of a website. With technology evolving rapidly, and with more tools being introduced and used online, precasters not only need to completely overhaul their sites every three to five years (there are no hard and fast rules around this timeline), but they also need to regularly update site information, navigation and tools to make their online homes as effective and engaging as possible.

For the crew at Gainey’s Concrete Products in Holden, La., regular site updates are a “no brainer,” according to Cyndi Glascock, design drafter. “If you’re not putting your company’s products,

## GETTING SOCIAL ONLINE

Online social networking may have started out as a convenient way to connect with old schoolmates, find a date or meet new friends, but over the last few years this strategy has evolved into a valuable business tool. Today, companies of all sizes and across all industries are using sites like Facebook, Twitter and LinkedIn to engage current customers, reach out to new prospects and gain market share.

Social media sounds simple enough in theory, and the barriers to entry are both low and cheap. All you have to do is set up a presence on a social networking platform currently available online and start posting information, uploading photos and videos, and interacting with customers, vendors, colleagues and other manufacturers. Interact enough, the experts say, and the results will compound upon themselves and eventually lead to new business and increased sales.

That’s when things start to get a little more complicated. As it turns out, maintaining multiple social media presences requires time, patience and creativity. Combine these requirements with the demands and the time constraints of running a precast business, and it’s easy to see why many social media efforts wind up languishing.

Jim Devitt, owner of Merritt Island, Fla.-based Devitt Consulting, says most industrial companies miss the boat when it comes to social networking. Devitt has worked with numerous firms over the years and says that while most will take the time to register and set up profiles on platforms like Facebook and Twitter, that’s about the extent of the typical company’s social networking efforts.

“Most companies don’t know what to do with social media once they get up and running with it,” says Devitt. “Facebook and Twitter are littered with firms that had good intentions at the outset, but that stopped posting and participating within a month or two.”

To avoid that trap, precasters should integrate social media into their overall marketing plans. So instead of just posting the occasional tweet or Facebook update, look at social networking as an important component of the company’s marketing approach. Use similar logos, company messages and information across all of your channels, says Devitt, and you’ll avoid confusing and alienating potential customers.

Throwing darts and hoping something sticks doesn’t work in the offline world, and it definitely is not a fruitful way to conduct a social networking campaign. To get the most out of their social networking investments, precasters should identify the top few primary audiences they would like to market via social networking, and then devise a plan for reaching these groups. Be sure to include in your research exactly which social media platforms will work best to drive traffic to your website, catalogue, landing pages and other online sites.

And to ensure that their social media strategies don’t wind up gathering dust online, Devitt says companies must allocate time to the effort (either on a daily or weekly basis) and understand that results don’t come overnight. “You have to let things season,” says Devitt, who advises companies to spend at least 90 days establishing themselves in social circles online. “Focus on building a fan base first and grow it until you have critical mass. From there it will take off on its own.”

## SEVEN TIPS FOR SELECTING A WEB DESIGN FIRM

Marketing expert Michele Spiewak of Rhino Public Relations based in Boston advises firms to follow these tips when selecting a web design firm:

- 1. Do your due diligence.** Scope out competitors' websites and those of other firms that appeal to you. Note the features, photos and amount of text. Do you prefer the sites with more photos? Minimal text? Social media access on the home page? Does your firm require a client portal for project management and communication? Knowing what you want and what you like, and explaining why is very helpful to the website creation process.
- 2. Craft a thoughtful RFP.** For many companies, hiring a web design firm is a new experience. Rely on what you already know about RFPs and responding to them: articulate your goals, target audience, project scope, budget and schedule. Outline the elements that web design firms should include in their proposal. Be sure to ask for functionality across many mobile platforms, and include search engine optimization (SEO) to improve your search ranking, web analytics and visibility. Some companies will take the opportunity to refresh their corporate logo along with the creation of a new website. If so, engage the services of a graphic designer and build that into the RFP as well.
- 3. Request proposals from five or six firms.** There are many web design firms out there, designing websites that range in complexity, technology and price. Since the process may be new to you, ask for proposals from a variety of firms so you get an education and learn the questions to ask. You'll be surprised by the array of responses you receive.
- 4. Schedule interviews with each firm** making the short list, and insist that they bring the designer and developer who will actually be doing the work. Personality is important, for example, but technology is even more so. Most websites can be designed and built in as little as 12 weeks, so the chemistry should feel right between your firm and the selected designer/developer team working together for the duration of the project. Long after the site is completed, however, your firm will have to live with the website on whatever web platform and content management system (CMS) you choose.
- 5. Be sure to ask enough questions** about the technology the website will be built on to ensure longevity in the marketplace and ease of use for everyone in your firm making updates. A web-based CMS will allow your non-technical staff to easily update content on both the online and mobile sites.
- 6. Assign an internal project manager to oversee the web design process.** Typically, your firm will supply all source material, including written content, headshots and project photography for the website (if not, expect to pay extra for these services.) Having one person in your firm responsible for the web design project will facilitate communication with both the designer and developer and ensure that deadlines are met. Remember that delays and redesigns might also cost you money.
7. When your website has been thoroughly tested and is nearing completion, **prepare your e-marketing.** It's a smart idea to include in your RFP a request for an email blast template that will reflect the new website design and support the firm's email marketing program with consistent branding. Create an email blast that celebrates your firm's new website, and don't forget to announce your new website on social media.

information and message out there, you'll miss out on a booming market," says Glascock. "Young engineers don't want binders; they want information that's easy and fast to access online."

To meet those customer demands, Gainey's Concrete – which is in the middle of a major site overhaul right now – divided its site into two different sections. One is for specifiers who want specifications, CAD drawings and other materials at their fingertips. The other section is for contractors who use the site's "request a quote form" to communicate their needs and who also turn to the precaster's published articles, tips and other content for help solving their own problems (such as how to install grease traps and how to prep for excavations). "We try to put as much information on our site as possible to help make our customers' lives easier," says Glascock.

As one of few woman-owned and operated precast manufacturing firms, Gainey's Concrete also uses its website to brand itself as such. "We try to focus on our culture by using pink-and-black color schemes and by playing off our woman-owned status," says Glascock. The company also wants its online audience to know that it is "fun and easy" to do business with, she adds, so its website also includes photos from events and other items that show off its corporate culture. "It's about being fun and interesting to work with while also helping customers understand that we know what we're doing," she says.

Maintaining that balance while staying ahead of the Internet technology curve isn't always easy for Gainey's Concrete, which established its first online presence 10 years ago. Any time the updating requires more than just a 30-minute stint with the site's user-friendly software interface, the precaster brings in a third-party designer to handle the task. To keep the upgrades within budget, Glascock says she always comes to the table with a clear direction on exactly what needs to be changed and why.

"If you just ask a firm to overhaul your site, you'll wind up paying thousands and thousands of dollars for the work," says Glascock. "But if you bring someone in



and give them specific goals, you can keep the costs to less than \$1,000.”

### Broadened horizons

Armen Alajian, owner of Arto Brick in Gardena, Calif., says his company’s website is an extension of its overall sales, marketing and branding strategies. It helps the company go beyond price, says Alajian, and position itself as an expert in the field of design – something that’s extremely important for a firm that sells precast tile and decorative products.

“Even in today’s tech-oriented world, buying is still a very personal decision,” says Alajian. “The more you can tell the world about your company – and the more you can use the Internet to achieve that goal – the better equipped you’ll be to go beyond price.”

On Arto’s site, for example, one link takes site visitors off to the company’s new products page, where one new launch per month helps the precaster “keep ahead of the rest of the world,” says Alajian. The site is connected to the firm’s Twitter, Instagram and Facebook accounts, where Arto regularly broadcasts information about its products and services (see the sidebar “Getting Social Online”). In return, Alajian says his company – which upgraded its site to its current format two years ago, and conducts continuous improvements on an as-needed basis – has been able to increase its sales while also branching out into international markets.

“The feedback we get from our site comes in the form of dollars and greater ROI,” says Alajian. “In the last two years alone, for example, we’ve gone from being a local company to one that has an international presence.”

To precasters looking to upgrade or completely overhaul their web presences this year, Stratis says the key is to pick a reputable, reliable web designer (see the sidebar “Seven Tips for Selecting a Web Design Firm”) and then communicate your wants, needs and concerns in a concise, understandable fashion. Avoid getting overwhelmed by the many different tricks and tools that are available and constantly in flux, and focus on customer needs. In fact, one way to figure out the latter is to simply ask your current and prospective clients this simple question: What do you want out of our corporate website?

“Customers are hungry for information, so don’t be afraid to put too much out there,” says Stratis, who early on preferred to limit the amount of information posted online in order to get prospects to pick up the phone and call the company directly. “Nowadays everybody needs things instantly – from the engineer who is doing his project research at 2 a.m. to the specifier who is looking for drawings online at 2 p.m. Your site content has to be able to satisfy those needs in a fast, effective way or your visitors will click over to another site.” ■

*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.*

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Do I know the first step to take before deciding to update my plant and grow my company?

If I want to be a successful precast concrete manufacturer in the future, what do I need to do today?

# How to Diversify **PART 1**

Follow these 9 steps to help you prepare for future growth.

BY SUE McCRAVEN

**Editor's Note:** This article begins a three-part series for precast concrete producers who are thinking about diversifying their product line and modernizing production. Part 1 shares 10 steps to help precasters plan for future growth. In the January-February 2014 issue, Part 2 will discuss new equipment, processes, materials, formwork, software and integrated systems to maximize production efficiencies. Part 3 (March-April) will highlight small- to medium-sized producers who made the hard decisions and investments that led to expanded markets and a brighter future.

You're thinking of growing your precast concrete company by adding a new product and expanding your market niche. But where do you start? What's the first order of business? According to industry experts, investing in a new formwork system or overhead crane is not the first step to upgrading your plant or diversifying into a new market. It doesn't start when you see an ad for the latest mixer and think, "Hey! This would be a great fit for our operation." And the decision to expand your business certainly won't be born of management complacency or a doom-

and-gloom attitude about our current economy.

NPCA asked leading precast plant designers, system engineers and equipment suppliers for the most important points to get across to precasters who want to branch out. Industry experts agree on the No. 1 message: If you want to diversify your company – whether or not it requires a new tool or an integrated batching/mixing/control system – a wise investment decision can only spring from your current mindset, or your outlook, as a businessperson in today's world.

Here are nine steps to consider that will help you prepare for future growth:

## **1. Take a hard look at your business mindset**

Complacency is not a good business investment, as we have seen from our past. History is packed with the do's and don'ts of business decisions and the consequences of management malaise. Here are a couple of examples:

Slushing knee-deep in profits in the '70s, America's auto executives were well aware that Japan's small-car production was in overdrive, but they



believed Americans would always be big-car aficionados. But the Big Three never anticipated politics, the OPEC oil embargo and the resulting oil crisis that started a continual escalation of gas prices, ushering in the thundering market invasion that would all but pull the rug out from under them.

Likewise, Kodak, another “company stuck in time,”<sup>ii</sup> didn’t consider the tremendous market potential for digital cameras, even though Kodak made the first one.<sup>iii</sup> Narrowly focused on its robust film market, it didn’t see the digital stampede over the horizon until it was too late. Kodak was brutally overrun in the ‘90s by its ingenious Japanese competitors. Stunned, Kodak could only watch as Canon, Sony and Fuji left them in the dust.

Will North American precast concrete manufacturers cling to a complacent market approach? Or will they continue to innovate in an ongoing quest to manufacture the highest-quality products at the lowest price by seeking out and investing in the world’s best technologies and production efficiencies?

**2. Develop a worldview**

No company is regional anymore. In today’s world, major precast concrete companies and large manufacturers know that they are part of the global marketplace. But some small- to medium-sized precasters hold on to



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a mindset that their companies are “regional” operations.

“We’re no longer a regional industry. A producer can realize huge benefits in new product offerings, process efficiency and product quality simply by researching best practices in other precast markets outside North America,” said E. Max Hoene, president of Advanced Concrete Technologies Inc. and a major plant equipment supplier with European roots. “The high costs of shipping still dictates that most precast products still be manufactured locally, and that provides opportunity for producers. With cost-effective upgrades, any precaster can achieve dramatic improvements in quality, lower labor and material production costs, and greater product strength. Precasters who choose value-added products are positioning themselves for growth.”

Many North American precasters today are adopting and benefiting from the phenomenal production efficiencies that have been status quo in European plants for the last 20 years. “Europe has embraced high-quality precast, mass produced, 24/7, with very low labor costs,” said Robert Ober, president of Plant Architects & Plant Outfitters.

Larry Ebert of Elk River Machine Co. agrees: “The truth is, we’ve got products and relationships everywhere in the

world. No one is regional anymore.”

### 3. Find a growing market segment

Hoene advises to look at other parts of the world. “Learn about new products and processes that have been perfected and could translate to a new product offering in a local market. You will discover your market edge by delivering the highest quality precast concrete at the lowest production cost,” he said.

“Narrow in on a growing concrete product or market, one that is expanding today and will grow in the future,” said Ober.

For example, big block is “the fastest growing segment of the retaining wall market,” said Ebert. “Ten or 12 years ago, small block was the majority of the retaining wall market, but now proprietary big-block systems are utilized in greater volumes in commercial and infrastructure projects.”

Wayne Faulkner, products plant specialist for Command Alkon, put it this way: “The only way to stay in this business in the long run is for producers to explore new markets and adapt their operations so that they are versatile enough to offer a range of precast products.”

### 4. Assess your plant and staff

If you are contemplating expansion, Ober recommends that producers ask, “What will it take?” If a new product or production system looks promising to you, ask:

- How many sq ft do I have under a roof?
- What will my existing (covered) square footage accommodate?
- Do I need new formwork?
- How many plant personnel/staff are needed for a new product or process?
- Do I have sufficient storage/yard space?
- Will I need to be ISO or FEMA approved? AIA certified?
- Is my resident staff qualified, or will they need training or certification?
- What is the capital cost for required plant upgrades, tools and equipment?
- Will my staff have to travel to learn a new system?

### 5. Enhance your product line by



### staying close to your customers

The most important thing that Hoene observes about successful producers is that they have a close relationship with their customers and work to anticipate market demands. "There are precasters who were booming during the recession and remain successful today," he said. "Why? Because they've stayed close to their customers. They've asked customers what they need and what product improvements would help. Ask your customers, 'What can I do to help serve you better?'"

Staying abreast of precast market needs will guide your plant-update decisions.

### 6. Outcompete CIP and other traditional solutions

Find out about any upcoming cast-in-place projects and see if you can offer a better, faster precast solution. "If traditional concrete is specified, determine what can be delivered precast," said Hoene. "Convince the contractor or developer that you can deliver ready-to-install precast concrete for a faster project completion than CIP. Save the contractor time, and he makes more money on the job."

Use precast concrete's advantages of higher quality, energy efficiency and the cost savings of a rapid installation to

convince contractors to convert from CIP to precast. "The cost savings will justify the contractor's switch to precast, and by winning more work, the precaster can justify an investment in new equipment or a plant upgrade," said Hoene.

### 7. Seek out balanced, objective product information

If you are looking at a plant update or expansion, be careful to seek out technical advice from a wide range of sources, both independent design consultants and product vendors. "You want to have the advantage of seeing all the equipment/process options on the table, on a spreadsheet," said Ober. "You want to weigh the pros and cons of all the brands of equipment/machinery available and decide what's right for you."

Making an informed decision to branch out means reaching out to all the sources of information available. It means knowing the current demands of the marketplace. "Most of the plant owners and operations managers we deal with have been to multiple trade shows, spoken to other producers in their area or elsewhere, solicited quotes from vendors, read magazines, searched the web, discussed plans with customers, and sought out trade association guidance," said Hoene.

### 8. Invest in the future!



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Historically, North America has been the world's industrial powerhouse and technological leader, and is blessed with an abundance of natural resources, innovative thinkers, scientists and



PLANT MODERNIZATION AT SHEA CONCRETE PRODUCTS, AMESBURY, MASS.

engineers – a land built by fearless adventurers and entrepreneurs.

Technology has shrunk the world and made the North American precast concrete industry part of a global marketplace. But that doesn't mean static management and business complacency are justified by a lingering, lackluster economy. Industry experts agree that many small- to medium-sized precast concrete producers cannot keep doing things the way they have in the past if they expect to succeed in the future. Waiting until the economy improves won't work, because only business leaders who aren't afraid to invest in the future can generate economic growth and prosperity.

**9. Take a new approach and act on it**

"Precasters need to identify and expand into new products," explained Ebert. "They need to take a fresh look

at new products with a much different approach than anything they've done in the past. The old way of doing business won't work, because our world has changed. Producers need to recognize emerging market forces that make their companies and their products vulnerable. Then they need to have a plan to branch out – or to minimize damage if their worst fears become reality." ■

*Sue McCraven, NPCA technical consultant and Precast Inc. technical editor, is a civil and environmental engineer.*

**Endnotes**

<sup>i</sup> Quote from Robert Burley, professor at Toronto's Ryerson University, who has photographed shuttered Kodak facilities in the United States, Canada and France since 2005.

<sup>ii</sup> In 1991, Kodak came out with the first digital camera, the Nikon F3.

Photos courtesy of E. Max Hoene.

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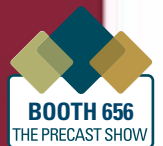
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# IN ANY WEATHER

**SHEA CONCRETE PRODUCTS  
MANUFACTURES PRECAST FLOATING  
DOCKS TO REPLACE AN AGING SYSTEM IN A  
COASTAL MASSACHUSETTS TOWN.**

BY MASON NICHOLS

Photo by Stephen Chmieleski ([www.stevechmphoto.com](http://www.stevechmphoto.com))





*Editor's Note: Earlier this year, NPCA launched its first-ever Reader's Choice Cover Contest seeking projects to be considered for the feature article in Precast Inc. magazine. Voting was open to all NPCA members, and after a close competition, Shea Concrete Products of Amesbury, Mass., came out as the winner with its floating docks project. The feature article below, written by NPCA staff member Mason Nichols, is followed by short descriptions of the other contest entries.*

## **WINNER**

**PRECASTER:** Shea Concrete Products

**PROJECT:** Floating Docks and Dock Fingers

**LOCATION:** Lynn Seaport Landing Marina, Lynn, Mass.

Stiff winds, brutally cold temperatures and severe storms are a fact of life in the Northeast, which can experience some of the harshest weather in the United States. Along the oceanfront, conditions are often more volatile, where the combination of crashing waves and swirling winds creates an environment seemingly unfit for any building material.

Late in 2012, the coastal town of Lynn, Mass., petitioned Marinetek, a Finland-based manufacturer of harbor products, to replace its aging dock systems located within the town's seaport marina. An important question for both the town and contractor became, "Which solution will provide the durability and functionality necessary to withstand the elements and get the job done right?"

The answer? Precast concrete.

To accomplish the task, Marinetek partnered with Shea Concrete Products, a precast concrete manufacturer with three locations in Massachusetts. According to Greg Stratis, manager, Shea Concrete Products was able to secure the job thanks in large part to the respect it has earned throughout its more than 60 years in the industry.

"Marinetek was referred to us because they had heard very good things about Shea," said Stratis. "The job was also close to one of our production plants, so they gave me a call to see if I'd be interested in putting together a number for them."

Stratis also stressed that Shea takes an interest in unique projects and is not afraid of tackling them, so when the opportunity for this project came along, the company jumped on it.

To manufacture the docks, Marinetek supplied Shea with the forms and engineering necessary to complete the project. Stratis appointed a small, experienced group within his production team to pour the forms, following the strict guidelines and checklists Marinetek designated for the process.

Though the largest piece manufactured was 9 ft wide by 50 ft long and weighed more than 50,000 lbs, only a small percentage of each dock was actually made up of concrete. The remaining portion consisted of large Styrofoam blocks designed to give the docks buoyancy, enabling them to float. Dave DeRose, production manager for Shea Concrete Products, described the production process in detail.

"These things are massive, you know, but the actual thickness of the wall was only 2 to 2.5 in. on the side, and the top was roughly 4 in. thick," said DeRose. "We were just encasing these enormous



into place, where a 1-in. pencil vibrator would work to ensure that the mix filled the form to its required thickness.

In order to protect the manufactured docks from the elements, galvanized rebar, reinforcement and corrosion inhibitors were used throughout the process. Additionally, the bottom of the Styrofoam blocks – which remain exposed in order to help achieve the buoyancy necessary for flotation – were coated by Marinetek with a special material designed to prevent damage caused by marine organisms.

Even after each dock was poured, the strict nature of the quality control process continued to dictate the path of the project. DeRose explained that the standards required by Marinetek were more difficult to achieve than those associated with standard Shea products. “Where our stuff, we will pick at 2,200 psi, we couldn’t touch Marinetek’s until it reached 80% of its total strength, which was the 6,500 psi they wanted in 28 days,” he said. “We had to be at 5,000 in order to be able to pick these.”

Once the docks were completed, each was placed onto a flatbed trailer for transportation to the Lynn Seaport Marina. After arriving on site, a crane lifted and lowered each dock into the ocean, though for many of the docks, small tugboats were also used to get them to their eventual destinations.

“For this job, we weren’t able to set up a crane in such a spot that it could reach, say, dry land and then also reach its final resting spot,” Stratis said.

Overall, from November 2012 to February 2013, Shea manufactured 42 docks for delivery to the marina in Lynn, including 14 main docks and 28 dock fingers. By May, all of the docks were in place, and Shea had already been petitioned to complete similar projects at other locations in Massachusetts and Connecticut.

While Stratis referenced the durability of precast concrete as critical to the prolonged resilience of the docks, he also noted the benefits of networking in ensuring unique jobs such as these are completed correctly. “Networks like NPCA are great places to contact other precasters if you have questions on how



AFTER ARRIVAL ON SITE, MANY OF THE DOCKS HAD TO BE FLOATED BY TUGBOATS TO THEIR DESTINATIONS, WHERE THEY WERE LIFTED AND LOWERED INTO PLACE. *Photos courtesy of Shea Concrete Products*

had been poured too thick, the entire dock could have been compromised. Despite the possible issues associated with the project, DeRose echoed Stratis’ sentiments, stating, “We take on a lot of different jobs like this. We like challenges.”

With so little room to work inside of each of the dock’s walls, Shea selected a self-consolidating concrete mix to complete the job. This allowed them the flexibility to achieve the flow necessary to fill the form to Marinetek’s exacting specifications. “What we ended up doing was modifying our SCC mix to not be a straight self-consolidated, but also not be a straight conventional mix,” DeRose said. “It was kind of a hybrid. We got our flow down the walls in order to get the concrete where it needed to go.”

For each dock, the production team began by pouring a cover of concrete directly on top of the Styrofoam block. This resulted in the placement of a generous coating of wet concrete on top of the foam, which was also woven through the dock’s reinforcement system. Once the team felt comfortable with the top coating, it would then begin to fill the side walls by pouring concrete directly on top of the original layer. The modified SCC mix would then flow down the walls and



blocks of foam inside concrete.”

If even the slightest error had been made during the manufacturing process, the effect on the functionality of the docks would have been devastating. If, for instance, one of the side walls



to make specialty products," he said. "I talked to Jefferson Concrete about this project before we began. You learn through people in the organization that you network with."

DeRose noted that everyone involved in the process had to be "on their game" in order for the project to be completed successfully. Thanks to a solid group of individuals working on the docks and a dedication to strict QC, the team was able to produce a high-quality product that met the standards specified by Marinetek.

Stratis agreed, stressing his confidence in the team at Shea as critical to completing the project satisfactorily and on schedule. "Some precasters

are comfortable with unique projects because they have the right skilled laborers in place," he said. "I wouldn't want to tackle a project like this if my employees weren't educated."

In completing the dock project for the Lynn Seaport Marina, Shea Concrete Products exhibited the "never back down" mindset Stratis exudes when speaking about his company, a mindset the company shares in common with the very product it manufactures.

No matter what the conditions, precast – like Shea Concrete Products – is up for the task.

## OTHER CONTEST ENTRIES

(in alphabetical order by company name)

**PRECASTER:** Advantage Precast Inc.

**PROJECT:** Planters

**LOCATION:** City of Portland Streetscape, Portland, Ore.

Downtown Portland, Ore., is certainly picturesque, but the addition of 25 precast concrete planters courtesy of Advantage Precast further bolsters the Pacific Northwest city's aesthetic charm.

Each planter was manufactured using a complex steel form, making the project highly customized and artistic. During the production process, many modifications to the mix design and prototypes were made. In the end, the mix design included imported aggregates with sandblasting and coating to achieve a unique exposed finish. The unusual crenulations of the planter also contributed to each piece's distinctive appearance.



**PRECASTER:** CGM Precast

**PROJECT:** John Wooden Statue Base

**LOCATION:** Indianapolis

In downtown Indianapolis, John Wooden, former UCLA men's basketball coach, strategizes with his players while down on one knee, just as he did during his legendary coaching career. However, unlike in days gone by, the "Wizard of Westwood" kneels not on a basketball court, but instead on a unique precast concrete statue base.





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The statue, which was unveiled before the start of the NCAA basketball tournament in 2012, required a base with an exacting steel mold. The base consisted of four unique panels, each with a 4-in. depressed band for lettering, creating 360 degrees of continuously angled lettering matching exactly at all four seams, and so casting them proved to be difficult.

CGM Precast had molds designed using steel, stainless steel rods and bronze rails to attach and hold the lettering while casting the concrete. Though the process presented a challenge, the base was completed and delivered on time, further emphasizing the utility and flexibility of precast concrete.

**PRECASTER:** Colorado Precast

**PROJECT:** Dinosaur Eggs

**LOCATION:** VelociRFTA (Roaring Fork

**Transportation Authority), Greater Aspen, Colo.**

When a customer called Colorado Precast to request precast concrete dinosaur eggs, the plant was certainly startled. Nevertheless, Colorado Precast excitedly accepted the job, producing a total of 27 eggs. Each egg weighs 2,750 pounds, measuring 6.5 ft by 3.5 ft.

Gould Construction and the Roaring Fork Transportation Authority requested the production of the eggs to promote fossil heritage for a nearby dinosaur park. Upon their completion, they were placed at bus stops along a route from Glenwood Springs to Aspen.

After agreeing to the project, Colorado Precast poured each egg with a minimum of 4-in.-thick walls and a mix that averaged 7,500 psi. At the tail end of the production process, each egg was coated with a polyurea application and hand stained with color to achieve the life-like surface effect desired by the project owners.



**PRECASTER:** MBO Precast Inc.

**PROJECT:** Catch Basins, Sewer Manholes, Stormwater Treatment Units, Light Pole Bases, Retaining Walls, etc.

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**LOCATION: Plymouth North High School, Plymouth, Mass.**

Building the new Plymouth North High School in one of the most historic towns in America was no small task, with nearly 300,000 sq ft designated for the school's main facility and senior center.

MBO Precast was selected to



manufacture a variety of precast concrete products for the \$65 million project, including underground utilities, parking and on-site services. Additionally, 14 Stone Strong retaining walls were constructed, encompassing approximately 5,000 blocks and totaling more than 50,000 sq ft.

Overall, MBO Precast manufactured more than 500 products used in the construction of the new school.

**PRECASTER: Roman Stone Construction Co.**

**PROJECT: Bridge Abutments, Bridge Panels**

**LOCATION: North Bridge Rehabilitation, Hampton Bays, N.Y.**

With more than a century of operation under its belt, the North Highway Bridge – part of the Long Island Railroad system in New York – was in need of repairs. While the superstructure of the



bridge was deemed to be in fair to good condition, the substructure, including abutments, wing walls and pedestals, required improvements.

To bring the bridge back up to standards, Roman Stone Construction Co. manufactured and installed two abutment slabs and six additional bridge elements. Because one of the primary goals of the project was to minimize the effect on commuters, the work needed to be performed quickly. Roman Stone responded by completing all components of its portion of the project within 48 hours.

Thanks to the design and speed advantages of precast concrete, the project was completed successfully in rapid fashion.

**PRECASTER: Smith-Midland Corp.**

**PROJECT: Exterior Wall Cladding**

**LOCATION: The Alexander, Edgewater, N.J.**

Tasked with replicating the architecture of New York City's 1940s-1950s era Park Avenue for a nine-story apartment building in Edgewater, N.J., Smith-Midland Corp. manufactured precast concrete wall cladding with historical details such as cornices, reveals and bull noses.

Due to the lightweight design of the system used, many project costs were



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reduced, including those associated with the building foundation, structure, shipping and installation. Additionally, the project featured 1,024 LEED-friendly exterior panels, combining a proprietary precast concrete product with traditional architectural precast totaling nearly 100,000 sq ft.

The proprietary 360 degree concrete-to-stud connection isolated the exterior precast concrete cladding from the structural stresses associated with wind loading, steel frame movement, expansion and contraction, and seismic shock. The result was a residential building both structurally sound and pleasing to the eye.



**Pleasant Hill, Calif.**

The products StructureCast supplied for the construction of two buildings on the campus of Diablo Valley College in Pleasant Hill, Calif., speak to the incredible versatility of precast concrete. From wall panels to curbings and beyond, StructureCast supplied more than 700 pieces for the structures, which were designed to house the college's student services, culinary arts and food services facilities.

Sustainability was a key factor in the selection of precast for the project, with

each building being designed to achieve LEED Gold certification from the U.S. Green Building Council. Additional unique aspects of the project included green roofs, building integrated photovoltaics and natural evaporative systems.

Overall, the \$50 million project was completed in only 10 days. By using precast, the project owner's were estimated to have saved \$1 million in construction costs. ■

*Mason Nichols is NPCA's communication coordinator.*

**PRECASTER:** StructureCast  
**PROJECT:** Wall Panels, Stair Treads, Planters, Curbings, Wall Caps  
**LOCATION:** Diablo Valley College,

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# A DESTRUCTIVE MARRIAGE: All You Need to Know about ASR

BY G. TERRY HARRIS SR., FACI

**If you've ever been put off by overly technical explanations of alkali-silica reaction in concrete, here's a quick and easy-to-understand explanation.**

**B**efore addressing alkali-silica reaction (ASR) in concrete, let's start with what you already know. Concrete is essentially a mixture of two components: aggregates (stone, gravel and sand) and cement paste (water, cementitious materials, air and admixtures). The paste contains interconnected microscopic pores through which water can migrate. This pore water in concrete is a highly alkaline solution.

Alkali metal hydroxides in the pore solution chemically react with certain aggregates that contain silica. It is easier for these alkali metal hydroxides to combine with silica (quartz), which is in a more disordered, or reactive, form.

### **An expansive and destructive marriage**

Since alkali hydroxides and unstable silica have a strong

FIGURE 1. SEVERE ASR-INDUCED CRACKING VIEWED ON THE END FACE OF A 20-YEAR-OLD REINFORCED (PORTLAND CEMENT ONLY) PRECAST CONCRETE BRIDGE BEAM. THE REACTIVE AGGREGATE COMPONENT WAS A RIVER GRAVEL CONTAINING A REACTIVE CHERT® (FLINT) AND QUARTZITE COMPONENT. *Photo by Dr. Ted Sibbick, W. R. Grace & Co., www.grace.com*

mutual attraction, these two compounds join hands, so to speak. Together they swell up as they draw in moisture from the surrounding paste, becoming a gelatinous chemical couple. And we should expect their union to grow progeny – or additional little chemical reactions. The problem is that the chemical result of their union is not so little.

Unfortunately, the gelatinous result of this chemical reaction, under certain conditions, may cause deleterious expansion. In fact, in extreme circumstances, the ASR gel expands so much that it cracks the concrete. As the gel absorbs more water and continues to expand, it induces internal pressures that may crack the aggregate, the cement paste or the surrounding concrete.

ASR is simply explained in three steps as follows:

1. Alkali + Reactive Silica = Alkali Silica Gel
2. Alkali Silica Gel + Moisture = Expansion
3. Expansion = Cracking

### **10 ASR facts**

1. ASR does not necessarily cause damage within a structure. If harmful ASR expansion does occur, these other nine facts could come into play:



## THE SUREST WAY TO PREVENT ASR IS TO AVOID AGGREGATES THAT ARE KNOWN TO BE REACTIVE. UNFORTUNATELY, THIS IS NOT ALWAYS POSSIBLE OR PRACTICAL.

2. *Map cracking* – Map cracking (intersecting cracks) is not always indicative of ASR, but expansive ASR often reveals itself as map cracking. Map cracking is usually difficult to see when the concrete surface is dry, but it is more easily seen after the concrete is wetted and has begun to dry (see Figure 1).
3. *Surface deposits* – ASR gel can sometimes be found along cracks and in voids within the concrete, and these deposits can range in color from white to dark gray.
4. *Efflorescence* – Efflorescence (calcium hydroxide deposits) on concrete surfaces may be confused with ASR gel. Efflorescence can also develop from cracks in the concrete originally produced by ASR.
5. *Popouts* – ASR does not cause all popouts. Pop-outs (the breaking away of small portions of a concrete surface) have a number of causes, such as porous aggregates that freeze and expand and aggregates contaminated with clay (clay – a champion of expansive force) or other deleterious compounds (pyrite). Popouts caused by ASR will almost always have a residual gel deposit at the location of the pop-out (see Figure 2).
6. *Petrographic tests* – A petrographic examination is the only

method to confirm the presence of deleterious ASR attack. Cracking, popouts and surface deposits can all be strong indicators of ASR attack, but taken separately, they are not definitive evidence.

7. *Structural integrity* – Concrete's load-bearing capacity and structural integrity is not significantly affected by moderate cases of ASR.
8. *Wetting and drying cycles* – Deleterious ASR is amplified in structures exposed to continuous wet and dry cycles and external sources of alkalis such as deicing salts.
9. *Available technology* – ASR can be avoided through the use of available concrete-mix material histories and an informed mix design for production.
10. *Test your mix materials* – The best way to control ASR is to test your mix materials slated for production.

### How to avoid deleterious ASR

The surest way to prevent ASR is to avoid aggregates that are known to be reactive. Unfortunately, this is not always possible or practical. When proportioning a concrete mix for resistance to ASR, previous material history is extremely important. The use of a low-alkali cement, fly ash, slag, silica fume and metakaolin are



FIGURE 2. SEVERELY DEGRADED “SWEATY” ASR-REACTIVE AGGREGATE PARTICLES SHOWN ON THE EXPOSED SURFACE OF A CONCRETE CORE TAKEN FROM AN ASR-AFFECTED HARBOR WALL STRUCTURE. REACTIVE AGGREGATES WERE MAINLY COMPOSED OF POROUS CHERT. THE CEMENT PASTE SURROUNDING THESE REACTED AGGREGATE PARTICLES OFTEN APPEARS TO BE STAINED WITH ASR GEL, WHICH ALSO APPEARS AS A WHITE POWDER WHEN FULLY DRIED. Photo by Dr. Ted Sibbick, W. R. Grace & Co., [www.grace.com](http://www.grace.com)

### ASR TEST METHODS

Test Methods for identifying potentially reactive aggregates are:

- **ASTM C227**, “Standard Test Method for Potential Alkali Reactivity of Cement-Aggregate Combinations (Mortar-Bar Method)”
- **ASTM C289**, “Standard Test Method for Potential Alkali-Silica Reactivity of Aggregates (Chemical Method)”
- **ASTM C295**, “Standard Guide for the Petrographic Examination of Aggregates for Concrete”
- **ASTM C1260**, “Standard Test Method for Potential Alkali Reactivity of Aggregates (Mortar-Bar Method)”
- **ASTM C1293**, “Standard Test Method for Determination of Length Change of Concrete Due to Alkali-Silica Reaction”
- **ASTM C1567**, “Standard Test Method for Determining the Potential Alkali-Silica Reactivity of Combinations of Cementitious Materials and Aggregate (Accelerated Mortar-Bar Method)”

Unfortunately, the results of these various ASTM tests can frequently be contradictory.

all beneficial when proportioning for ASR resistance.

Lowering the total cement content has also proved to lower the total alkali load, providing that a cut in cement content does not compromise the strength spec. Chemical admixtures such as lithium nitrate or lithium hydroxide<sup>1</sup> are known to be effective in controlling ASR. As with any concrete mixture, testing with the selected materials for production is recommended (see the sidebar "ASR Test Methods").

### Knowledge is the best defense against ASR

As noted previously, most moderate ASR cases, although unattractive, do not adversely affect the load-bearing capacity of concrete structures. Of greater concern is that deleterious ASR expansion may "open up" the concrete to allow ingress for other deleterious processes. Adverse environmental elements such as chlorides, nitrates, sulfates, sea water and carbonation products can penetrate concrete through cracked surfaces and cause deterioration.

While ASR can be a devastating problem in concrete, especially when exposed to cycles of wetting and drying, information available today enables the concrete producer to design – either through historical knowledge or testing – the mix materials and proportions that will consistently produce ASR-free concrete. ■



Terry Harris is North American technical services manager, W. R. Grace & Co., Cambridge, Mass., and has 32 years of experience in the concrete industry, including ready mix, precast, block and admixtures. Terry is active in ACI, ASTM, NRMCA and NPCA and has a bachelor's degree in concrete technology from Daytona State College. Contact him at [Terry.Harris@grace.com](mailto:Terry.Harris@grace.com)

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### Endnotes

<sup>1</sup> Lithium salts have been used to treat existing ASR-affected structures with limited success. It is very difficult for the lithium to penetrate the concrete sufficiently, even on heavily cracked surfaces.

<sup>2</sup> Chert is a microcrystalline or cryptocrystalline sedimentary rock material composed of silicon dioxide (SiO<sub>2</sub>). It occurs as nodules, concretionary masses and as layered deposits. Chert breaks with a conchoidal fracture, often producing very sharp edges. Early people took advantage of how chert breaks and used it to fashion cutting tools and weapons. The name "flint" is also used for this material. Source: [geology.com/rocks/chert.shtml](http://geology.com/rocks/chert.shtml)

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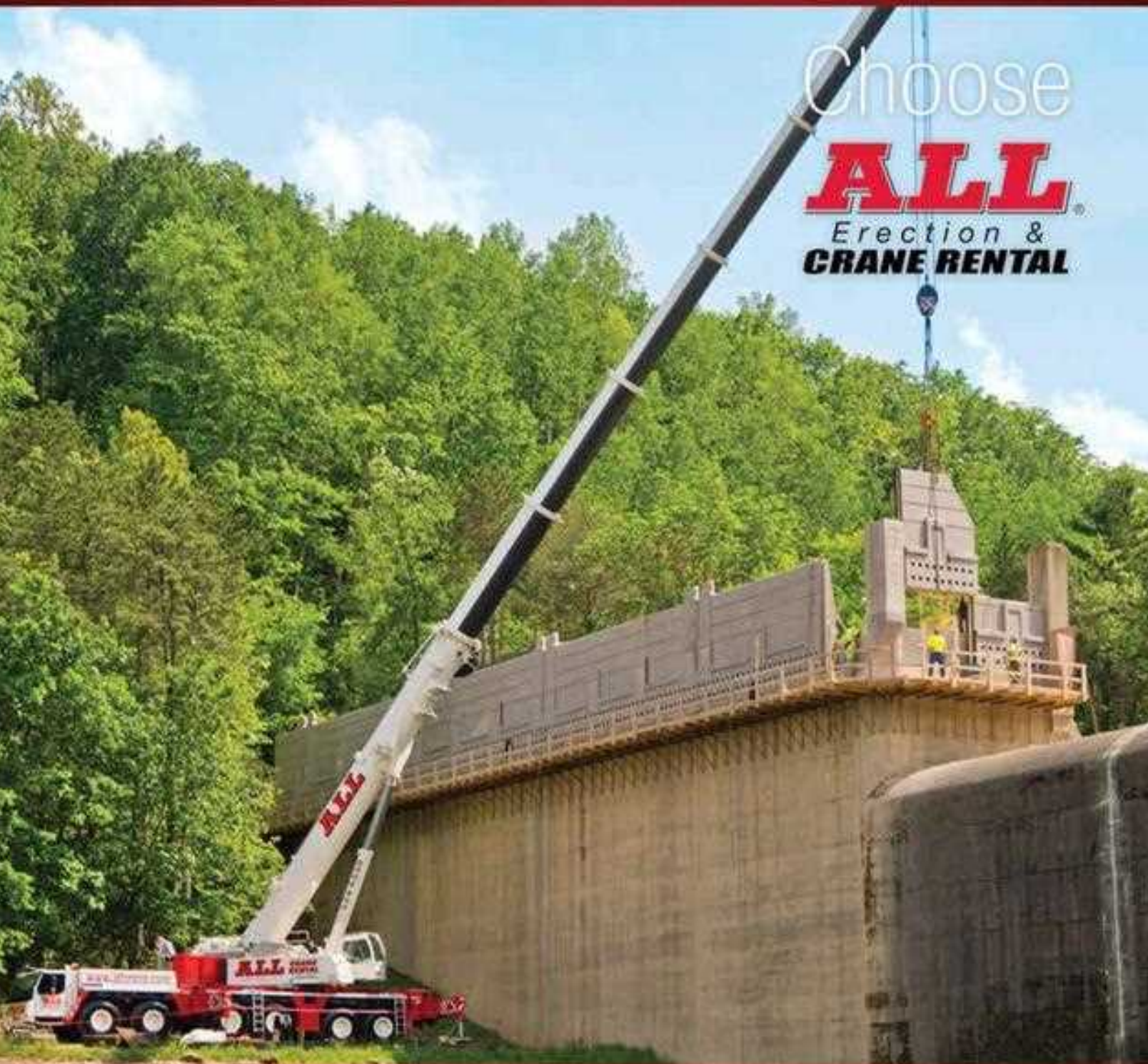
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JERSEY SHORE BOARDWALK FIRE,  
SEPT. 13, 2013. *Photo by Bob Bielk,  
Asbury Park Press*

# Where There's Smoke, There's Fire – UNLESS THERE'S PRECAST CONCRETE!

BY CLAUDE GOGUEN, P.E., LEED AP

**A**s businesses on the famous boardwalks along the Jersey Shore were on the road to recovery after the extensive damage of Hurricane Sandy, fate dealt them another blow.

On Sept. 13, a devastating fire engulfed dozens of businesses in Seaside Heights, reducing the buildings and boardwalk to ash. Some of the businesses had just reopened in July. Many of these structures were landmarks.

Also prominently in the news in recent weeks are the forest fires in western states. Already this year, 35,440 reported fires have burned a total of 3.9 million acres, including a significant portion of the iconic Yosemite National Park.

Fire, of course, isn't isolated to rural areas. According to the National Fire Protection Association, U.S. fire departments responded to an estimated 1,375,000 fires in 2012. These fires resulted in 2,855 civilian fire fatalities, 16,500 civilian fire injuries and an estimated \$12.4 billion in direct property loss. There was a civilian fire death every 3 hours and 4 minutes and a civilian fire injury every 32 minutes in 2012. Home fires caused 2,380, or 83%, of the civilian fire deaths.

Fire has been our foe for as long as man has walked this earth. After Rome burned in 64 AD, Emperor Nero had regulations drawn up requiring fireproof materials to be used for external walls in rebuilding the city. This was perhaps the first recorded example of using the science and engineering of the day in the practice of fire protection engineering.

With all the advances in fire protection and detection technology, building with a fire-resistant material is still the best way to protect homes or businesses (or Roman cities). Current building codes require that resistance to fire be considered in the design of buildings. That is why precast concrete is often chosen for wall panels or floor assemblies to provide fire resistance and containment solutions.

## Fire ratings

You've probably heard of a fire rating, which is a measurement of a material's ability to withstand fire or to give protection from fire. As defined in the International Building Code, "fire resistance rating" means "the period of time a building or building component maintains the ability to confine a fire or continues to perform a given structural function or both."

Fire ratings are given in hours. For example, the required fire-resistance ratings for columns in high-rise hospitals may be four hours, which is more stringent than those for single-story building exterior walls, which may only need a one-hour rating. Some fire ratings are stipulated by codes, and some others by the owner. For example, a utility company may require that its vaults have two-hour ratings even though the building code may be silent on requirements for such structures.

In building design, materials are often classified as fire resistive, noncombustible or combustible. Fire resistive means something is hard to burn, but not impossible to burn. A prime



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**Table 2.1 – Fire resistance of single-layer concrete wall, floors, and roofs**

Aggregate Type	Minimum equivalent thickness for fire-resistance rating, in.				
	1 hour	1.5 hours	2 hours	3 hours	4 hours
Silicons	3.5	4.3	5.0	6.2	7.0
Carbonate	3.2	4.0	4.6	5.7	6.6
Semi-Hightweight	2.7	3.3	3.8	4.6	5.4
Lightweight	2.5	3.1	3.6	4.4	5.1

FROM ACI 216.1 - DETERMINING FIRE RESISTANCE OF CONCRETE AND MASONRY CONSTRUCTION ASSEMBLIE

concrete slab can be found in the table at left, taken from ACI 216.1, "Determining Fire Resistance of Concrete and Masonry Construction Assemblies."

**What characteristics influence fire resistance?**

Fire resistance of concrete is influenced by aggregate type, moisture content, density, permeability and thickness. Aggregate used in concrete can be classified into three types: carbonate, siliceous and lightweight. Carbonate aggregates include limestone and dolomite. Siliceous aggregates include materials consisting of silica, granite and sandstone. Lightweight aggregates are usually manufactured by heating shale, slate or clay.

Carbonate aggregates consist of calcium or magnesium carbonate or combinations of the two. During exposure to fire, these aggregates calcine – in other words, carbon dioxide is driven off and calcium (or magnesium) oxide remains. Since calcining requires heat, the reaction absorbs some of the fire's heat. The reaction begins at the fire-exposed surface and slowly progresses toward the opposite face. The result is that carbonate aggregates behave somewhat better than other normal-weight aggregates in a fire.

Moisture content has a complex influence on concrete's behavior in fire. Concrete that has not been allowed to dry may spall, particularly if the concrete is highly impermeable,

example is the World Trade Center towers. The planes did not cause the towers to collapse, but rather it was the resulting jet-fueled fire. The flames were so intense that the structure lost strength and buckled.

Those materials in the tower were fire resistive. Other materials may be labeled as noncombustible, which means they are unable to combust or burn. Precast concrete does not burn. It also resists fire very well.

Materials and assemblies of materials of construction are tested in accordance with the requirements set forth in ASTM E119, "Standard Test Methods for Fire Tests of Building Construction and Materials." Typical fire ratings of a precast

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such as concretes made with silica fume or latex, or if it has an extremely low water-cement ratio. Concretes that are more permeable will generally perform satisfactorily, particularly if they are partially dry.

In general, concretes with lower unit weights (densities) will behave better in fire; dried lightweight concrete performs better in fire than normal-weight concrete.

### Rebuilding with precast concrete

Whether we're talking about homes in eastern California or commercial structures on the Atlantic shore, damage from fires is a real risk, and that risk can be dramatically reduced by considering precast concrete as a building material. Precast concrete is used all over the world to provide a resilient and sustainable structure that can resist the effects of many types of natural and man-made disasters.

After Hurricane Sandy, officials in Long Beach, N.Y., decided to rebuild portions of the boardwalk with durable precast concrete. Recently, US Concrete Precast began constructing a portion of the 2,500 precast pieces that will serve as the base of the Long Beach Island boardwalk in Long Beach, N.Y. The boardwalk, destroyed by Hurricane Sandy in October of last year, is an overall rebuild estimated at nearly \$44.2 million.

The precast concrete is less susceptible to storm damage



AFTER HURRICANE SANDY, PORTIONS OF THE BOARDWALK IN LONG BEACH, N.Y., WERE REBUILT WITH DURABLE PRECAST CONCRETE. *Photo courtesy of US Concrete Precast Group*

than the traditional wood planks used in the past and is built to withstand the high-velocity winds of hurricanes that commonly occur on East Coast beaches. The nostalgic feel of the boardwalk will be preserved by inlaying tropical wood planks on top of the precast, on which visitors will then be able to walk.

Precast will not only provide long-lasting strength and resistance to hurricane-type storms, but also a resistance to the harsh saltwater environment. It will also provide important fire resistance, which one does not often think about when building on the ocean; however, this attribute may gain importance in light of recent events in Seaside Heights. ■

*Claude Goguen, P.E., LEED AP, is NPCA's director of Technical Services and Sustainability. For more information on fire resistivity of precast concrete or other sustainable attributes, contact him at [cgoguen@precast.org](mailto:cgoguen@precast.org) or (317) 571-9500.*



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# NPCA Convention Wrap-Up

The NPCA 48th Annual Convention drew 346 of its members to the Omni Homestead Resort in Hot Springs, Va., for several days of committee meetings, the Annual Business Meeting, NPCA awards, educational sessions and a host of other activities. Here is a wrap-up:

## Mike Vaughn presented with Yoakum Award

Mike Vaughn, president of Vaughn Concrete Products based in Henderson, Colo., was presented with the Robert E. Yoakum Award Oct. 12 during the Chairman's Banquet Gala. Vaughn becomes the 45th winner of the Yoakum Award, one of the longest-running and most prestigious honors in the precast concrete industry. Congratulations Mike!



MIKE VAUGHN, LEFT, RECEIVES THE YOAKUM AWARD FROM ROLAND LINDSAY, LAST YEAR'S WINNER.



BRENT DEZEMBER

## Brent Dezember elected chairman of the Board

Brent Dezember, president of StructureCast in Bakersfield, Calif., has been elected chairman of the Board of Directors of NPCA. In his acceptance speech, Dezember cited five "action statements" that he wants NPCA leadership to focus on during the coming year: certification leadership; specifier outreach; member service and value; improving industry marketing; and aligning industry associations. Other officers elected by a voice vote of members at the Annual Business Meeting were Michael Tidwell, Bartow Precast Inc.,

chairman-elect, and Andy Wieser, Wieser Concrete Products Inc., secretary/treasurer. Joining the Board of Directors for three-year terms are Jennifer Burkhart, Arrow Concrete Products Inc.; Leo Feuerstein, Western Precast Concrete Inc.; Brian Leary, Reading Rock Inc.; Greg Roache, Gainey's Concrete Products Inc.; and Keith Womack, J-K Polysource Inc.

## New marketing initiative launched

Take a New Look at Precast. That's a phrase that specifiers across North America should be hearing a lot over the next couple of years as the new NPCA marketing initiative gets underway. NPCA's marketing task force spent more than a year working with a national marketing firm to develop the program, which includes a Marketing Toolkit that includes a promotional video and a variety of advertisements and other promotional materials that can be adapted and personalized by individual companies. The Marketing Toolkit will be mailed to each company that attended the kickoff session. Training webinars are now being set up and will be announced soon. Additional training will be available at The Precast Show 2014 in Houston. The Marketing Toolkit is free to all Producer Members who attend either a webinar or a training session. To preview the toolkit and for more information, visit [precast.org/newlook](http://precast.org/newlook).

## Top Gun Class of 2013

Mimi Rainero Coles of Permatile Concrete Products Co. heads the Top Gun class of 2013. Rainero Coles, the immediate past chairman of the Board, was presented with the Douglas G. Hoskin Award for membership development. Rainero Coles is credited for sponsoring the most new members during the past 12 months. Also earning accolades for advancing to higher categories of membership recruitment were Dominic Girotti, Hy-Grade Precast Concrete, Hall of Fame Level; Andy Wieser, Wieser Concrete Products Inc., Second Merit Level; Bruce Hottle, Eagle Concrete Products Co., First Merit Level; and Ray Rhees, Oldcastle Precast Inc., Top Gun Level.

## Foundation Fundraisers Top \$34,000

Two NPCA Educational Foundation fundraisers held during the convention raised more than \$34,000 for the Foundation's scholarship program. A Silent Auction pulled in \$20,467, while the Sporting Clays Tournament raised more than \$14,000 in donations. Andrew Hayward of Panhandle Concrete Products Inc. was the top marksman at the Sporting Clays event with a score of 86. A list of Silent Auction donors and prizes is available online at [precast.org/foundation](http://precast.org/foundation). Thanks to all who donated and participated! ■



# New faces on the NPCA staff



MASON NICHOLS

Mason Nichols joined the NPCA staff to serve as communication coordinator. Prior to joining NPCA, Mason worked as the technology coordinator for Keller Williams Signature Partners, a real estate firm based in Lafayette, Ind.

Mason earned his bachelor's degree in journalism from Grand Valley State University in Allendale, Mich., before obtaining a master's degree in communication from Purdue University

in West Lafayette, Ind. He will be managing NPCA's website and social media networks and contributing content to NPCA's magazines and blog.

In his spare time, Mason enjoys spending time with his wife, playing guitar and following his favorite Chicago sports teams, the Bears and Blackhawks.

Mason can be reached at [mnichols@precast.org](mailto:mnichols@precast.org) or (800) 366-7731.




ALEXA MILKEY

Alexa Milkey started at NPCA earlier this year as the member services representative and sales assistant, getting to know the members and assisting the director of Certification and Regulatory Services. Recently Alexa joined the Meetings Department, where she will use her communication and organization skills to plan NPCA events.

Alexa earned her communications and psychology degrees from Indiana University. Before coming to NPCA, she worked for a marketing firm in Indianapolis where she communicated with new prospects and assisted the sales team. She is excited to be involved in this new role at NPCA and hopes to meet you at an upcoming event.

In her spare time, Alexa enjoys running, reading and walking her dog.

Alexa can be reached at [amilkey@precast.org](mailto:amilkey@precast.org) or (800) 366-7731. 



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Source: Max Preuss, a professor of IT management at the University of Hawaii

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# Oldcastle Precast constructs first-of-its-kind all-precast air station hangar

PHOTOS COURTESY OF OLDCASTLE PRECAST

Oldcastle Precast of Bartow, Fla., recently completed work on a first-of-its-kind U.S. Coast Guard (USCG) air station hangar project, which included a 20,000-sq-ft CAT 5 aircraft hangar, HAZMAT storage building and residential building structure for U.S. security forces. The new CAT 5 aircraft hangar was constructed from the ground up using Oldcastle Precast's new Titan Wall system.

The entire aircraft hangar structure, including the patent-pending motorized hangar doors, was fabricated with engineered precast concrete. The new facility allows the USCG to base helicopters and aircraft flying in support of OPBAT on Great Inagua, Bahamas, replacing a steel hangar destroyed by Hurricane Ike in September of 2008.

The USCG was seeking low-maintenance, extended-lifecycle

structures designed to withstand extreme weather conditions and requested a concrete structure in its specifications. Using its new system, Oldcastle Precast engineered, manufactured, shipped and erected the 6,000-psi precast structural components that made up the CAT 5 aircraft hangar. All structural components were designed and engineered to comply with the current editions of UFC 4-010-01, "DoD Security Engineering Planning Manual," and UFC 4-010-02, "DoD Minimum Antiterrorism Standoff Distances for Buildings."

The CAT 5 hangar was constructed with 44 precast columns, more than half of which exceeded 38 ft high, and 200 16-ft x 8-ft horizontal wall panels. Four precast hangar doors were used to close the 28-ft-high, 125-ft-wide hangar door opening. Each door, measuring 28 ft x 31 ft and weighing 60,000 lbs, is composed





A U.S. COAST GUARD HANGAR, FEATURING ALL-PRECAST CONSTRUCTION INCLUDING ITS DOORS, TAKES SHAPE IN THE BAHAMAS.

of three precast panel sections and is propelled individually to allow total flexibility for deployment. Each door also has two wheels, and each wheel has its own motor allowing for total independence of movement.

Oldcastle Precast also constructed the 1,100-sq-ft precast HAZMAT building designed to house hazardous materials, fire pump equipment and a 1,080 sq-ft, four-bedroom, two-bath residential precast structure for Coast Guard staff. Both building structures were engineered to withstand extreme weather conditions.

Oldcastle Precast started production of this design-build project in October 2011, erection started the following month and was completed in mid March 2012. Construction Management of Florida Inc., located in Vero Beach, Fla., was the prime contractor and design builder on the project. Leo Daly was the designer and Bryan Construction, located in Colorado Springs, Colo., was the subcontractor.

The USCG has submitted this project for USGBC LEED-NC Certification. ■

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People & Products is a forum where NPCA members and nonprofit organizations can share information on new products, personnel promotions/acquisitions or service announcements concerning the precast concrete industry. Items are printed on a space-available basis. For possible inclusion, send your press releases and photos to NPCA. Attn: Precast Inc. magazine, 1320 City Center Drive Suite #200, Carmel, IN 46032 or email them to rhyink@precast.org.

**Hyster introduces electric lift truck series**

Hyster Co., a worldwide lift truck designer and manufacturer based in Greenville, N.C., has introduced a new high-performance, fuel-efficient internal combustion engine alternative with its J80-100XN electric lift truck series.

Electric lift trucks like the Hyster J80-100XN can provide a more efficient alternative to diesels, says the company. The new electric lift truck series being debuted in North America is available in 8,000, 9,000 and 10,000 lb models and offers a tough, environmentally friendly option for applications that were traditionally powered by internal combustion engines.

The J80-100XN electric lift trucks are built to powerfully provide maneuverability and maximum uptime in an 80-volt configuration. The new extended shift feature helps balance battery

and shift life by equalizing the truck's performance and battery usage. This standard feature allows enhanced run times without recharging over long periods of time, drastically reducing downtime and increasing efficiency.

To improve operator comfort, minimize fatigue and increase uptime, the J80-100XN electric lift trucks feature enhanced operator controls, including a redesigned operator compartment, improved brake pedal layout and infinitely adjustable steer column.

The new series also includes the exclusive VISTA Mast, which provides fast lift and lower speeds combined with superb visibility, greater control and increased speed and efficiency.

For more information, visit [hyster.com](http://hyster.com).

**Columbia Machine's Concrete Products Division appoints new president**



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RICHARD ARMSTRONG

Columbia Machine Inc., based in Vancouver, Wash., has appointed Richard Armstrong as president of its Concrete Products Division. Armstrong has been with Columbia for 12 years and has spent the past eight years as president of the Palletizer Division.

Armstrong will bring his passion for product development, customer service and market development to a strong management team, says the company.

For more information, contact Tim Goode at (360) 694-1501 or visit columbiemachine.com.

Press-Seal's three employees.

In 1963, Hank Skinner was hired as general manager and given a sizable percentage and a mandate to make the company grow by the owners. That was the beginning of a long, sustained growth that continues today. Shortly after its formation, the company became an associate member of the National Precast Concrete Association.



By 1989, Hank Skinner turned the reigns over to his son, James W. Skinner, who began the transformation of the company from a fabrication and distribution operation to a true manufacturer. The beginning of this transformation was the installation of Press-Seal's first extrusion line and injection molding press in 1990. This changed and set the direction of the company for the coming years. James Skinner was also the recipient of the NPCA Robert E. Yoakum Award of Merit in 1996.

Today, Press-Seal occupies 180,000 sq ft of office and manufacturing space in Fort Wayne and employs 165 teammates. They now have various rubber and plastic extruders and molding

### Press-Seal Gasket celebrates 60 Years

Press-Seal Gasket Corp., based in Fort Wayne, Ind., celebrates its 60th year in business this coming year and remains a family owned and operated North American company.

Founded in 1954 by a family owned concrete pipe producer who was not satisfied with the pipe gaskets available on the market at the time, it was strictly a fabrication operation for the production of concrete pipe gaskets. The rubber was molded by Goodyear Tire and Rubber and spliced into pipe gaskets by

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machines, a complete rubber and plastic laboratory, and several new cutting-edge manufacturing technologies.

For more information about Press-Seal, visit [press-seal.com](http://press-seal.com).

### Wilbert Precast branch manager selected as Chamber of Commerce chair



MIKE DOOLEY

Mike Dooley, along with being the Yakima branch manager for Wilbert Precast Inc. of Spokane, Wash., has devoted countless hours to public service through various programs that promote business development within communities and individuals. As of July 1, Dooley was appointed as the chairman of the board for the Greater Yakima Chamber of Commerce. In this position, Dooley will be able to advance programs he has already been involved in and lead the Chamber through the growth he wishes to see take place.

"As chairman of the board for the Greater Yakima Chamber of Commerce, I hope to steer the Chamber back toward education, networking and lobbying for our members," says Dooley. "Since the economic downturn of 2008, the Chamber, like almost all nonprofit organizations, has had to work in

survival mode, and most efforts have been toward short-term survival. Staffs and programs have dwindled down."

Since Dooley began in November 2005, he has been a valuable member of the Wilbert team. "Mike Dooley has been an outstanding branch manager since the day he started over eight years ago," said Dan Houk, CEO of Wilbert Precast Inc. "Mike takes real ownership of his plant and is involved in many civic and local boards and business groups. Efforts like this put precast concrete in the forefront of professional groups such as architects, engineers and community leaders."

### Meadow Burke unveils Burke Lift system to the precast, prestressed industry

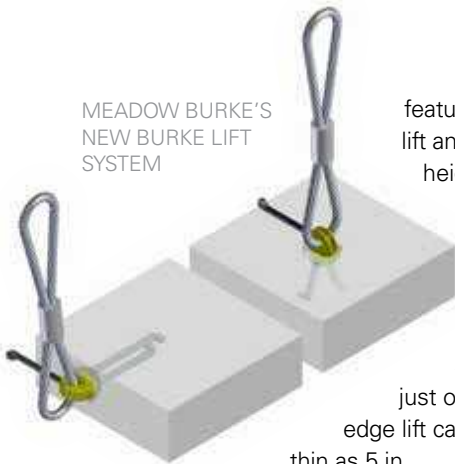
Meadow Burke, a manufacturer of precast concrete reinforcing products and concrete forming accessories based in Tampa, Fla., recently unveiled its new Burke Lift system.

The Burke Lift brings together face and edge lifts in a complete 10-ton system. This unique lifting system significantly simplifies the process by using a smaller count of anchors while providing a broader range of lifting capabilities, says the company.

Among the features of Burke Lift is a one-clutch system, which allows for the elimination of switching between 4/5-ton and 8/10-ton clutches. The system also allows the clutch to bear into the Burke Lift anchor, rather than the concrete. The Burke Lift



**MEADOW BURKE'S  
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features a single style face lift anchor supplied in eight heights to accommodate panel thickness from 5 to 12 in. In addition, the system is equipped with a single style edge lift anchor that requires just one standard length. The edge lift can be used in panels as thin as 5 in.

For more information, visit [meadowburke.com/burke-lift](http://meadowburke.com/burke-lift).

For more information, visit [meadowburke.com/burke-lift](http://meadowburke.com/burke-lift).

**Dayton Superior names senior vice president of Global Sales and Marketing**

Dayton Superior Corp., a provider of engineered product solutions for the nonresidential concrete construction market, announced that Randy Brown has joined the company as senior vice president, Global Sales and Marketing. He will be responsible for all of Dayton Superior's domestic and international sales and marketing initiatives.

Brown brings an extensive background in global strategy, new business development, multi-country portfolio management and brand strategy to his position at Dayton Superior. Prior to joining Dayton Superior, he served as vice president, Global Business Development for Vehicle Service Group Consolidated, A Dover Company. He holds a bachelor's degree from Illinois State University in Industrial Technology, and a degree from Kent State University's Graduate School of Management in technology and strategic management.



RANDY BROWN

For more information about Dayton Superior, visit [daytonsuperior.com](http://daytonsuperior.com).

**Dayton Superior expands service offering**

Dayton Superior has announced that it is expanding its broad range of value-added services to include brokerage services for new and used forming and shoring products as well as tilt-up braces.

The company will work as a third party to bring together buyers and sellers of new and used equipment and will facilitate the purchase, sale or trade.

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The company's brokerage services buy, sell and trade new and used forming and shoring products along with tilt-up braces from multiple industry brands, including its Symons by Dayton Superior brand. The brokerage services are offered for domestic and international customers.

For more information, visit [daytonsuperior.com/broker](http://daytonsuperior.com/broker) or contact Mike Miller at (847) 391-4700.

### HELIX introduces rebar replacement product to North America

HELIX, a manufacturer of reinforcement bar replacement based in Ann Arbor, Mich., has introduced its HELIX Micro-Rebar in North America.

HELIX Micro-Rebar, developed at the University of Michigan, can totally replace rebar and mesh in structural concrete, says the company. Made of 270 ksi wire and only 1 in. long (25mm) with a 0.5mm cross section, HELIX Micro-Rebar adds crack strength as well as ductility to concrete. The patented "twist" allows the product to engage at the instant micro cracks begin to form. And, because HELIX Micro-Rebar is distributed throughout the entire concrete mix, there are never any reinforcing placement errors, dangerous climbing on formwork to place rebar or mesh, or accidents at the rebar chop saw, says the company. One of the significant advantages is the elimination of



HELIX MICRO-REBAR

stocking, handling, cutting, tying and placing of most rebar, rebar mats and mesh.

HELIX is currently seeking precasters who would like to test HELIX Micro-Rebar in their plants. Interested precasters should contact Wes Dees, precast market development director of HELIX, at (937) 432-5909 or [wes.dees@helixsteel.com](mailto:wes.dees@helixsteel.com). For more information about HELIX, visit [helixsteel.com](http://helixsteel.com). ■

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<b>The Precast Show 2014</b>	George R. Brown Convention Center – <i>Houston</i>	Feb. 13-15, 2014
<b>NPCA 49<sup>th</sup> Annual Convention</b>	Le Centre Sheraton Montreal – <i>Montreal, Quebec</i>	Oct. 22-25, 2014
<b>The Precast Show 2015</b>	Orange County Convention Center – <i>Orlando, Fla.</i>	March 5-7, 2015
<b>The Precast Show 2016</b>	Nashville Convention Center – <i>Nashville, Tenn.</i>	Jan. 21-23, 2016
<b>The Precast Show 2017</b>	Colorado Convention Center – <i>Denver</i>	Feb. 9-11, 2017

For the most up-to-date information about NPCA events, visit [precast.org](http://precast.org).

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Whether integrated throughout the matrix of concrete when used as an admixture and/or directly applied to the concrete as a surface treatment; ConBlock MIC inhibits the growth of bacteria, fungi, mold, and algae. The unique chemistry of ConBlock MIC creates a chain of molecules, attracting the organisms towards a Nitrogen ion that provides an ionic shock - puncturing the organism's outer cell upon contact. Thus, the concrete surface becomes uninhabitable to microbiological organisms.

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