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What a Visitor Sees

BY MIMI RAINERO COLES | *Chairman, National Precast Concrete Association*

For more about NPCA's certification program, please visit precast.org/certify.

When visitors walk through your plant, what do they see? Is it an orderly, well-planned environment where everybody knows their jobs, safety procedures are embedded into the culture and production ticks along like clockwork? Or is it something less?

The National Precast Concrete Association administers a plant certification program with a primary focus of providing quality assurance to specifiers and contractors that the product received from a certified plant meets or exceeds every criteria described in the plans. The step-by-step procedures are described in the NPCA Quality Control Manual for Precast and Prestressed Plants. But maintaining certified status is dependent upon the annual inspection by an independent auditor.

NPCA recently completed its annual training session for 25 plant certification auditors from HPS Consulting Inc., the third-party engineering firm that has been conducting the certification inspections since 2008. One way to ensure the credibility of the certification program is by using independent auditors. Additionally, we provide credibility through the annual inspection process. While the plant's first inspection is planned, every succeeding annual inspection is unannounced. In addition, a percentage of plants are randomly selected to receive a second unannounced inspection every year. The result is that after a plant is initially certified, management knows that the plant must always be prepared for an inspection that could happen at any time. This ensures that quality control is an ongoing process.

The training of certification inspectors is critical, because the credibility of the plant certification program hinges on the way those audits are conducted. The concept behind plant certification is that it creates a level playing field for all certified plants, because we are all playing by the same set of rules and subject to the same quality standards. The inspection is quantifiable – there's no room for opinion on the part of the auditor. The auditor follows the same script at each plant and

assembles a report that is based on the specific procedures described in the QC Manual and how closely each plant is following each step.

The plant audit concludes with an exit interview that is meant to be both professional and educational, where the inspector – a trained engineer who has performed the same audit at many plants – sits down with the management team, reviews the audit and offers suggestions for ways to create efficiencies, reduce defects and ultimately improve customer satisfaction. For plants that have been through the process many times, it is a form of continuing quality improvement that over time distinguishes them in the industry as high-quality producers.

Quality assurance is so essential to the advancement of the precast concrete industry that NPCA wanted to see how its certification program held up to international manufacturing standards. So it applied for accreditation from the American National Standards Institute. Much like a plant opens up its entire operation to the certification inspector, NPCA opened up its entire procedures to the ANSI team. And after an exceedingly thorough auditing process, ANSI awarded accreditation to the NPCA certification program, essentially providing a stamp of approval that provides additional credibility to the program.

The goal of all this attention to detail is to assure anybody who specifies precast concrete in a project that the products coming from an NPCA certified plant will be of uniformly high quality. At the plant level, the result is that whenever visitors walk through your plant, they will see an orderly, well-planned environment where everybody knows their jobs, safety procedures are embedded into the culture and production ticks along like clockwork. Your plant doesn't have to be certified to operate at top efficiency, but the certification process provides a great roadmap for getting there and staying there. ■



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The BIG Little Company

Fred, Susan, Terrie and Chuck Machledt – owners of CGM Precast Concrete Inc. in Indianapolis – run a small precast operation, and yet they are contenders when it comes to large or complicated projects. Find out more about their space-efficient and energy-efficient production techniques starting on page 26.

Photo by Ron Hyink

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Address your letters and comments to the editor:
Precast Inc./Editor
1320 City Center Drive Suite 200
Carmel, IN 46032
(800) 366-7731 Fax: (317) 571-0041
E-mail: npca@precast.org
precast.org

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STAFF:

Publisher: Ty Gable

Executive Editor: Bob Whitmore

Editor: Ron Hyink

Associate Editor: Kirk Stelsel

Technical Editor: Sue McCraven

Graphic Design: Molly Flick Tippner

Advertising: Brenda C. Ibitz
bibitz@precast.org (317) 571-9500

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Will '13 Bring Luck for Contractors?

Manufacturers try to keep from stepping on the cracks as the recession recovery continues.

BY KEN SIMONSON | *Chief Economist, Associated General Contractors of America*

Construction was the first industry to fall into recession and the last to emerge from it. The industry finally seems to be recovering, but there are still plenty of risks that could cut short the revival.

Census data released Dec. 3 show that construction spending in October rose for the seventh month in a row and achieved the highest level since September 2009. Total spending of \$872 billion at a seasonally adjusted rate¹ was up 17% from the low-water mark recorded in February 2011.

But the recovery remains very incomplete and uneven. The October total was 28% below the all-time peak in spending set seven years earlier, in March 2006. In inflation-adjusted terms, the gap was even greater. And, while private residential and nonresidential spending both reached multi-year highs, public spending has been edging lower on a year-over-year basis since early 2011.

One puzzle about the construction recovery is that it has yet to show up in hiring. Throughout the economy, output has

Slow growth with signs of better times ahead.

By Robert Whitmore

grown much faster than employment. Nevertheless, private nonfarm payroll employment, which shrank by 8.9 million from January 2008 to February 2010, had recouped by 5.1 million jobs as of November 2012. Not so with construction: The industry shed 2.3 million jobs between April 2006 – nearly two years before overall private employment topped out – and January 2011, a year after private-sector hiring resumed. By November 2012, the industry had regained only 58,000 lost jobs.

The construction recovery is unbalanced in terms of geography as well as segments. Only 19 states and the District of Columbia had more construction employees in November 2012 than they had a year earlier, while 30 states had fewer. (Employment was unchanged in Michigan.) The one-year employment change ranged from an 8% rise in Hawaii to a 9% drop in Delaware. Throughout 2012, a few states have consistently added construction jobs – North Dakota, Texas, Indiana and, more recently, Arizona – while Florida, Georgia and Nevada, among others, have continued to lose jobs compared with year-earlier levels. But most states have fluctuated between gains and losses.

Encouraging new for contractors

Despite this very mixed record of growth, there is reason to believe 2013 will hold more optimism for contractors. First, the “shale gale” continues to spread. While the wells are considered mining, not construction, each site requires an access road, site preparation, storage facilities, pumping and processing equipment, and connections to pipelines. Nearby communities benefit from spending by the drilling companies, their workers and landowners-turned-royalty holders. Orders flow upstream for fracking sand, pipe and machinery. The biggest impact is downstream, in the form of additional interstate pipelines, ethane crackers and petrochemical plants, liquefaction trains and export terminals, gas-fired power and steel plants, and natural gas fueling stations for trucks. All of these categories of construction should mushroom in 2013, and in a wide variety

Every recession brings a shake-out. Companies that are poorly managed, or are on the fringes of the industry, go out of business. Viable companies that can't hang on through extended downturns are sold off to bigger companies. The culling of the herd results in an industry that is leaner and better managed when the dust settles and the market again turns upward. While it looks like the construction industry may have made the turn, 2013 looks like a year in which the precast sector is headed in the right direction but still in transition.

While most construction economists predict growth in the 4 to 6% range this year, NPCA is forecasting more tepid growth in the precast sector. The precast industry should gain about 2% in 2013, to about \$15.4 billion in precast sales and \$17.5 billion in total volume, which includes resale items.

“The indicators for precast are mostly positive, but the key sectors where precast is heavily invested are expected to remain flat in 2013,” said Ty E. Gable, NPCA president. Public works, a key sector for the precast industry that includes highways, bridges, environmental and other infrastructure work is expected to shrink by 1% in 2013 after a decline of 10% in 2012, according to the 2013 Dodge Construction Outlook. The passage of the MAP-21 (Moving Ahead for Progress in the 21st Century) transportation bill provided some stability in funding but no increases. The utility sector, which includes precast concrete utility vaults, utility buildings and other products that protect electrical equipment and other infrastructure, is expected to decline in 2013 after a record year in 2012.

“It's really a mixed bag for the precast sector,” Gable said. “If your area of the country is coming back from the recession, chances are you'll do pretty well this year. If your region has been a little slower to rebound, you may have another flat year.”

Another reason for the conservative estimate for the precast sector is the uncertainty that continues to keep private money on the sidelines and government projects on hold. Congress averted the fiscal cliff at the start of the year. But now the country is facing the specter of automatic across-the-board government spending cuts known as sequestration. It is unclear how sequestration would impact government-funded – and especially military – construction, but it likely means less available work for precasters who supply to the government and the Corps of Engineers.

Even with the paralysis in Washington, D.C., and the slow response of the private sector, Gable remains optimistic for the precast sector in the coming years. The 2012-2013 rebound of single-family housing will positively impact most of the other sectors in the coming years, leading to solid growth in the precast sector in 2014 and beyond. “There is still a tremendous amount of opportunity out there,” he said. “Concrete is the most versatile, longest-lasting, most economical building material in the history of the world, and the precast sector is well-positioned for the post-recession era of construction,” Gable said. “Project owners want sustainable, resilient construction. They want a smaller footprint, less clutter, less noise and less labor costs on site. Those are all benefits of precast concrete products,” he added. “We are well-positioned for the future.”

Robert Whitmore is NPCA's vice president of Communication.

FORECAST BY SECTOR

NPCA's 2013 forecast by product line includes the five major sectors of the precast concrete industry and an "other" category that encompasses a wide variety of products. These figures are based on the annual Precast Industry Benchmarking Report published by NPCA. Compiled by Industry Insights, an independent manufacturing research firm, the NPCA Benchmarking Report is based on a survey of precast concrete manufacturers in North America.

Building and Landscaping Products

\$2.58 billion

Includes architectural wall panels, architectural building components, prestressed structural building elements, basement/wall foundation panels, steps and basement entries, burial vaults and other related landscaping and building products

Sanitary and Stormwater Products

\$3.81 billion

Includes manholes, concrete pipe, stormwater management and retention structures, curb

inlets, catch basins and other related products

Transportation Products

\$2.58 billion

Includes box culverts, 3-sided structures, highway and traffic barrier, retaining wall systems, sound wall/barrier, prestressed bridge elements and other related products

Utility and Industrial Products

\$4.53 billion

Includes utility vaults, utility buildings and other related products

Water and onsite wastewater products

\$1.03 billion

Includes septic tanks, grease interceptors and other related products

All Other Precast Concrete Products

\$850 million

TOTAL PRECAST SALES VOLUME
\$15.38 BILLION

TOTAL VOLUME INCLUDING RESALE ITEMS
\$17.44 BILLION

of states. For instance, Industrial Info Resources reported Dec. 14, "There are roughly \$10.5 billion of infrastructure investments that are linked to further development of the Eagle Ford" shale formation in south Texas.

Second, there are multiple changes occurring in the U.S. supply chain. One of the biggest changes is actually far offshore: the widening of the Panama Canal, which in two years or less will allow passage of giant "post-Panamax" container ships capable of carrying 15,000 containers, more than triple the current maximum. East and Gulf Coast ports are dredging, raising bridge and tunnel heights, lengthening piers and wharves, and expanding storage yards. On Dec. 20, Gov. Bob McDonnell of Virginia announced his state would build a multibillion-dollar toll road to speed freight from the port of Norfolk to inland connections. Rail lines, trucking companies and warehouses on all coasts (including West Coast ports that seek to remain competitive) and along routes far inland are investing in private facilities to shorten delivery times.

Other developments as well are driving supply chain-related construction. Manufacturers are bringing plants back to the United States as labor and energy costs become more competitive. Also, more firms are seeking domestic sources of supply following interruptions in shipments caused by the volcanic eruption in Iceland in 2010, the 2011 earthquake and tsunami in Japan, and floods in Thailand. New warehouses are going up to provide faster service to customers switching from in-store to online purchases. Data centers remain a hot construction market as all types of businesses strive to process information and serve customers more quickly. Again, these developments are stimulating construction in many locations and niches.

Third, multifamily construction appears sure to keep going strong in 2013. Rising employment is enabling more first-time

or returning job holders to strike out on their own, but many are unable to qualify for a mortgage or unwilling to tie themselves to a house they may not be able to sell when they want to move. And a growing number of young adults are foregoing car ownership to live near transit, bike and short-term car rental options. Such locations are largely multifamily. Meanwhile, a growing number of seniors are likely to want to move from maintenance-intensive single-family homes into multifamily housing.

Recovery question marks

What segments will lag in 2013? Office, retail and public construction appear to have the poorest chances of posting significant improvement. Despite almost three years of steady gains in employment, the private sector still has nearly four million fewer jobs than in 2008. Firms are taking up as much as 30% less office space per employee than they did five years ago as they use more temps and teleworkers, and ditch their computer and filing rooms for the "cloud." The shift of consumers to online purchasing has left retailers closing more stores than they open.

As for the various levels of government, the federal government seems headed for years of declining employment and spending on facilities. State governments have had rising tax revenues but have had to spend more on Medicaid and other income support programs and on public employee retirement and health plans, leaving little for new construction. Local governments and school districts that depend on property tax receipts are still experiencing shrinking budgets, as the recent upturn in home prices will take a couple of years to show up in assessments.

Two big mysteries for 2013 are single-family housing and hospital construction. While homebuilding has clearly moved off

its low point, it is not clear that further increases lie ahead. Hospital construction has remained in the doldrums even though private university construction, which similarly relies in part on private donations and endowments, has resumed double-digit growth. It may take more time to sort out the impact of the Affordable Care Act on demand and funding for hospitals.

Lucky numbers?

Contractors should have better luck in '13 on materials costs. The producer price index for inputs to construction – a weighted average of the cost of all materials plus items consumed by contractors, such as diesel fuel – rose sharply at the beginning of 2012 but was tame in the second half of the year. Diesel fuel prices hit a four-year high in October but ended the year close to late-2011 levels. Cement and concrete prices were well-behaved all year, and steel prices were actually lower in most of 2012 than in the same months of 2011. With spotty growth in the U.S. economy, recession in much of Europe and a slowdown in China, 2013 should start out with continuing moderation in most materials costs.

The fate of many contractors and other businesses also will depend on how Congress and the White House resolve their differences over expiring tax provisions, spending programs and the debt ceiling. As always, economic, political and military developments in other parts of the world can have major implications for U.S. growth rates and materials costs. In short, '13 will be a lucky year for many contractors but holds an uncertain fate for others. ■



Ken Simonson has been the chief economist of the Associated General Contractors of America, the leading trade association for the construction industry, since 2001. He is also the 2012-2013 president of the National Association for Business Economics, the professional organization for individuals who use economics in their work. He has 40 years of experience analyzing, advocating and communicating about economic and tax issues.

¹ Seasonal adjustment is a statistical method to remove variation due to normal weather and holiday patterns. Annual rate means a monthly total is multiplied by 12 to allow ready comparison to full-year figures.

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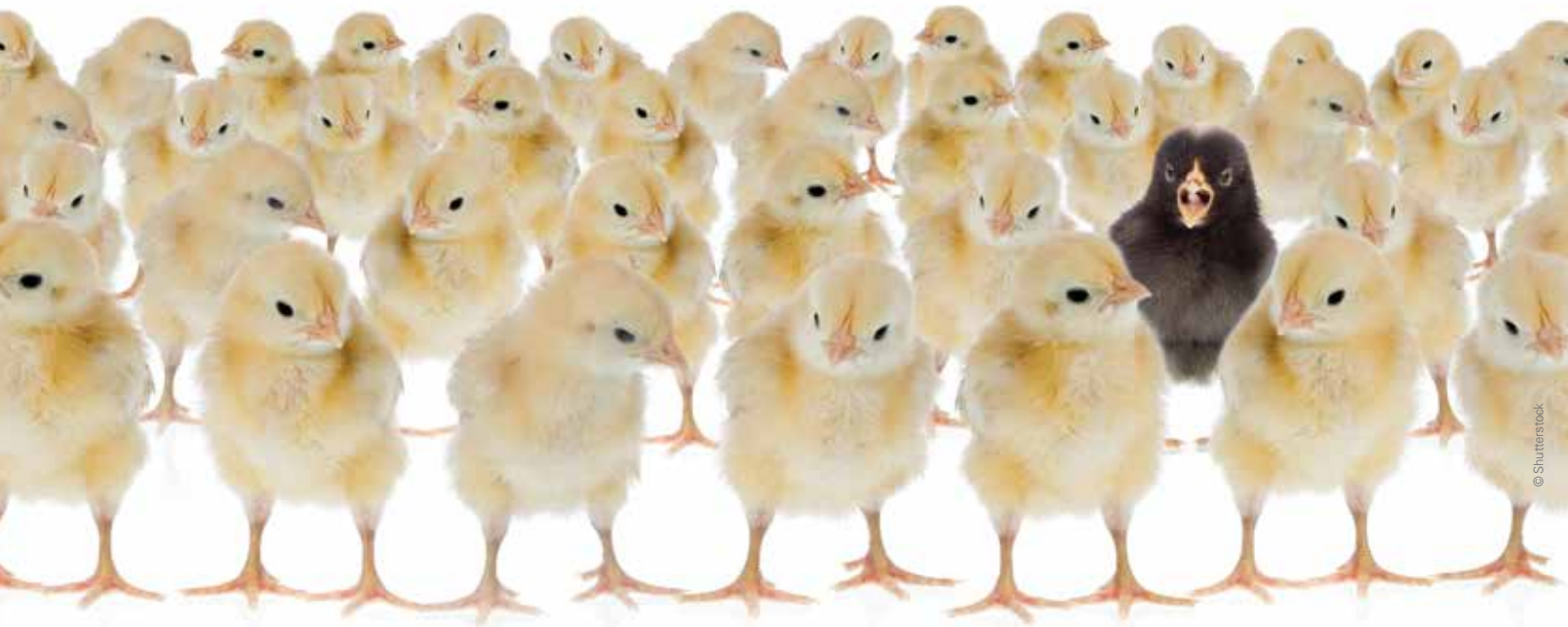
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Variability **PART 1**

Each step in the production process invites the potential for variability, which could equate to a lack of consistency – but you can minimize the effects.

BY CLAUDE GOGUEN, P.E., LEED AP

We throw the term “quality” around quite a bit when we describe our industry, our companies and our products, and yet quality means different things to different people. How would you respond to the statement that McDonalds makes a quality product? Yes, we’re talking about the Big Mac, Quarter Pounder and Filet-O-Fish.

Granted, when discussing quality, most people would not immediately conjure images of the Golden Arches, but consider this: You can go to a McDonald’s in Seattle or Miami, in Helsinki or Tokyo, order a Big Mac and it will taste the same. Moreover, you could go into a McDonalds in your home town today, next week, next month and next year, and that Big Mac will taste the very same every time. Whether or not you indulge in this famous sandwich is irrelevant, because the fact remains that McDonalds has an incredible system that ensures consistency among all its eateries around the world. That is a very important aspect of quality in mass production – consistency.

And now to bring this all back home, in our discussion about quality, there is little difference between the Big Mac and the Big Stack of manholes in your yard awaiting delivery. Do your customers feel confident that the products they receive from you will be the same every time, regardless of which plant, project or time of year? They should, despite the variables you may experience over the long haul with cement, aggregates and admixtures.

The thing with mass production

The advent of mass production has shifted the emphasis to the reproducibility of such things as the size, shape and strength of a product. Every project starts with a specification, either written or verbal. This is how the owner tells you what he wants. From that point until the product is delivered, there are many steps involving many people and many materials. Each of those steps involves some potential for variability, and provides for a challenging task to keep them all in check in order to deliver a consistent product.

We can’t eliminate variability, so we must ask ourselves how we can minimize it, and how much of it we can accept before specific actions are needed.

Many factors can influence variability (*see Figure 1*). It starts with your materials. In order to deliver a consistent product, you must demand and expect consistency from your vendors. You can be sure that McDonald’s product vendors have minimized their variability considerably.

Materials

You expect your purchased products to adhere to strict specifications such as ASTM C150 for cement, C33 for aggregates or C1017 for admixtures. You test your aggregates for moisture content. You test your well water. You store your materials in a consistent manner. You know that using aggregates from a bin under a large shady oak, compared with aggregates

from a bin in the sun, may provide additional challenges to maintaining consistency due to moisture content and temperature.

In order to control variability in your raw materials, you must closely monitor the physical and chemical characteristics of each delivery. Look at each load of aggregates. Pick it up in your hand to see and feel how clean it is. This daily routine will make it easier to spot differences. Check your gradations, compute your fineness modulus and track both. Minor changes in fineness modulus from, let's say, a 2.9 to a

2.7 could elicit some complaints from the production floor as the aggregates will be finer and, therefore, workability could be compromised.

You can also control variability in some raw materials by monitoring the mill certificates that accompany the deliveries. Your cement, for example, comes with a certificate containing a lot of data. It's good to pay special attention to your C_3S (tricalcium sulfate) and C_2A (dicalcium aluminate) percentages from load to load, as these two constituents influence early strength and control your initial set.

Also worthy of tracking is your SO_3 content. This is the sulfate that is added to the clinker in the manufacture of portland cement to retard the hydration of the aluminate phase. This is limited to 3% as per ASTM C150, but if this number varies from 2.3 to 2.7 between loads, it may have an effect on your initial set as well.

You can also track the Blaine Fineness. This number is a measurement of the surface area of your cement particles. The larger this number, the finer your cement. The finer your cement, the faster your cement will react. This is why high early cements will have Blaine Finenesses ranging near 2,440 ft^2/lb or 500 m^2/kg as opposed to 1,710 ft^2/lb or 350 m^2/kg for general purpose cement. By tracking these numbers from lot to lot, you will be able to see fluctuations and take action if necessary.

You should also look at your supplementary cementitious material certificates and track certain values. If you're using fly ash, you should pay special attention to the LOI number, or the Loss on Ignition. LOI is calculated by heating up a cement sample to 900 to 1,000 C (1,650 to 1,830 F) until a constant weight is obtained. The weight loss of the sample due to heating is then determined. A high loss on ignition can indicate prehydration and carbonation, which may be caused by improper and prolonged storage or adulteration during transport or transfer. The large portion of unburned material left over will be carbon. We want to make sure we have minimal carbon residue in our fly ash. Carbon is very porous, and the more we have in our fly ash, the more risk we have of it soaking up our admixtures, especially air entrainments. Carbon can absorb air-entraining admixtures to different extents, making it more difficult to routinely impart the correct amount of entrained air into concrete.

For slag, keep an eye on the Blaine Fineness, and track your

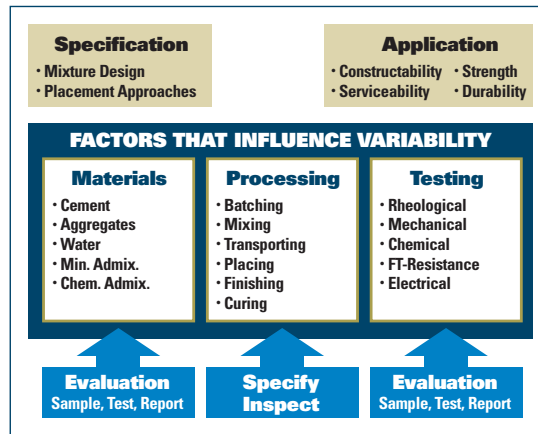


FIGURE 1 – FACTORS THAT CAN INFLUENCE VARIABILITY

SAI (slag activity index) as well. This is how the slag is tested for compressive strength and compared to the reference for portland cement. If the SAI is 75%, that means the strength of the slag is 75% of the strength of the cement. If we're opting for cement replacement, we want the SAI to be as close to 100% as possible.

Processing

Next we consider the batching or processing stage. Your materials could be very consistent, yet the manner in which you load your materials into the mixer could negate all of that. The

loader should be very careful about how the aggregates get from the pile into the hopper. He should pick uniformly across the front of the pile so that the gradations and moisture content of the pile going into the hopper are as close as possible to those same values obtained in testing. Picking from the top and then bottom of the piles can seriously alter those values, increasing the variability of the batching process.

Mixing times need to be consistent as well as delivery and placement of the concrete. Calibration of batching equipment on a regular basis can ensure that weights or volumes of materials are closely controlled. Consolidation through internal and external vibration needs to be conducted the same way regardless of who is doing it that day. Here's where continued training becomes very important. Relying on documented procedures used by one experienced worker to train a new person on using internal vibrators ensures that the new worker uses the same correct (or perhaps incorrect) methods. Plant-wide training for all workers minimizes that risk.

Curing products in the same environment can be challenging depending on the layout of your plant, but you must strive to provide consistent temperature, humidity and time regardless of climate.

Testing

Finally, we have the testing. It is critical that testing of concrete be performed consistently using the appropriate ASTM methods. Making cylinders with two layers one time and three layers the next can have an impact on the strength results. It is important when pulling a representative sample of aggregates from the stockpile that you pull it from different locations and not just from the surface. The same goes for sampling of fresh concrete.

Once again, consistent and periodic training for all QC personnel is a sure way to minimize variability in testing methods. Also, periodic calibration of testing equipment needs to be done to eliminate the risk factor.

Careful monitoring, tracking, training and calibration go a long way in minimizing variability and increasing quality. In the next issue, we will look at ways to measure and track variability. ■

Claude Goguen, P.E., LEED AP, is NPCA's director of Technical Services and Sustainability.

OSHA TOP 10 VIOLATIONS

How do the worst safety infractions in the construction industry affect precasters?

BY EVAN GURLEY



THE USE OF POWERED INDUSTRIAL TRUCKS WAS CITED NEARLY 2,000 TIMES BY OSHA LAST YEAR. EMPLOYEES SHOULD BE TRAINED ON THE EQUIPMENT'S LOAD, THE POTENTIAL FOR TIP-OVER, SPEED LIMITATIONS AND SEAT BELT USAGE.

For more than 40 years, safety in the workplace has been under the watchful eye of OSHA, the Occupational Health and Safety Administration. And while OSHA has not always been popular among manufacturers, Dr. David Michaels, assistant secretary of Labor OSHA, notes that since 1970 workplace fatalities have been reduced by more than 65%, and reported occupational injury and illness rates have decreased by more than 67%. Despite those reductions, the workplace still poses significant injury and illness challenges:

- Every day, nearly 13 workers die on the job (4,609 killed in 2011, an improvement from nearly 38 worker deaths a day in 1970).
- Every year, more than 4.1 million workers suffer a serious job-related injury or illness.
- Total costs paid for workers' compensation reached \$74 billion in 2009 (according to the National Academy of Social Insurance report):

Of the 4,114 worker fatalities in private industry during 2011,

the latest year for which full statistics are available, 721 or 17.5% were in construction. The leading causes of worker deaths on construction sites were falls, followed by electrocution, struck by object, and caught-in/between situations. These “fatal four” were responsible for nearly three out of every five construction worker deaths in 2011. Eliminating the “fatal four” would save roughly 410 lives in America every year.

- Falls – 251 in 2011 (35%)
- Struck by Object – 73 in 2011 (10%)
- Electrocutions – 67 in 2011 (9%)
- Caught-in/between – 19 in 2011 (3%)

As you can see, even with the significant worker safety improvements from OSHA’s inauguration in 1971, there is still room for great improvement, especially when considering that 13 workers who go to work every day will not return home to their friends and families.

While Canadian safety statistics are compiled on a province-by-province basis, the incidence rates of injuries in Canada would align fairly closely with these OSHA Top 10 violations.

OSHA Top 10 for 2012

Every year, OSHA releases its top 10 most frequently cited violations from the previous fiscal year as compiled by OSHA inspections. OSHA publishes this list to alert employers and employees about commonly cited standards so that they can use this information to take preventive measures. Many if not all of these frequently cited standards are preventable injuries or illnesses that occur in the workplace.

Year after year, this top 10 list of frequently cited OSHA violations remains basically the same. There may be a reshuffling of violations from year to year, but essentially the layout remains unchanged.

Patrick Kapust, OSHA’s deputy director of the Directorate of Enforcement Programs, best described the reason for creating a top 10 list in a recent interview with the Safety and Health Council: “The data found in the top 10 list is not meant to gauge how well OSHA is performing

or how safe businesses in the country are. The list is at its best when used by employers as a tool to improve safety at their work sites. Employers who may be interested in what are the possible hazards in their workplaces could look at the top 10 list and see if they’re covering all hazards and assessing the kinds of changes they may have to make to their safety and health programs.”

The top 10 most frequently cited standards (Construction and General Industry) for fiscal 2012 (Oct. 1, 2011 to Sept. 30, 2012) are:

#1 FALL PROTECTION (29 CFR 1926.501 – cited 7,250 times)

The use of 100% fall protection at the point of work, as well as going to and from the work area, is mandatory for all employees and all contractor personnel on projects when employees are at risk of falling or working a minimum of 6 ft or more off the floor or ground. The exception is the plant area covered by 29 CFR 1910.23, where the minimum distance off the floor or ground is 4 ft. Falls continue to be the leading cause of fatalities in the construction industry. Violations occur when these minimum requirements are not met.

#2 HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200 – cited 4,696 times)

It is important to establish requirements and procedures necessary to evaluate chemicals used at each respective site. Employers must provide information concerning physical and health hazards associated with these chemicals to employees who may come in contact with one or more of the chemicals on the job, and they must protect employees against uncontrolled exposure to these chemicals.

Employers share information through comprehensive hazard communication programs, which include container labeling and other forms of warning, safety data sheets and employee training. The requirements of this section are intended to be consistent with the United



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THE NO. 1 OSHA CITATION FOR 2012 WAS THE USE OF FALL PROTECTION.

Nations Globally Harmonized System of Classification and Labeling of Chemicals, Revision 3.

With the implementation of OSHA’s new Globally Harmonized System (GHS) into its Hazard Communication Standard (HCS), which will require full compliance by June 1, 2015, precasters will need to start transitioning their HazCom training, information and labeling to GHS in order to fully comply with OSHA regulations. Read more on GHS and the phase-in dates in the January-February 2013 issue of *Precast Inc.* magazine.

Mislabeling and the absence of training and safety data sheets continue to be among the top violations in the construction industry.

#3 SCAFFOLDING (29 CFR 1926.451 – cited 3,814 times)

Scaffolding violations may not be as prevalent in the precast industry, but for precasters who use scaffolding in their

day-to-day operations, violations often occur when walking surfaces fail to resist the load that it is handling; workers fail to provide fall protection for heights above 10 ft; or they incorrectly set up the scaffolding platform, access points, base/foundation or guardrail provisions.

#4

RESPIRATORY PROTECTION (29 CFR 1910.134 – cited 2,371 times)

Toxic fumes, gases, vapors and dust containing silica can be an issue in any precast plant if not addressed properly. Establishing and maintaining a respiratory protection program that meets OSHA standards is an important tool for a plant

worker's safety and health. A respiratory protection plan establishes requirements and procedures to protect employees against overexposure to airborne contaminants. Violations occur when plants fail to establish and maintain a written respiratory protection program, fail to provide a medical evaluation to determine an employee's ability to use a respirator, fail to establish requirements for voluntary use of respirators, fail to provide annual fit-testing, and fail to establish general requirements for respirator selection.

#5

CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT)

(29 CFR 1910.147 – cited 1,572 times)

Lockout-Tagout is a specific practice for establishing requirements and procedures to prevent the unintended release of energy – whether electrical, potential, gravity, hydraulic or pneumatic – that may energize an electrical circuit or a machine, or cause a machine part to unexpectedly move or fall, causing injury to any employee. Violations occur when plants fail to establish requirements in energy control procedures, fail to inspect the procedure established, fail to properly train employees on the procedures, and

PENALTIES AND VIOLATIONS

To get a better idea of OSHA's penalties for violations, let's take a closer look at the breakdown.

- **Other Than Serious Violation** – A violation that has a direct relationship to job safety and health, but probably would not cause death or serious physical harm. A proposed penalty of up to \$7,000 for each violation is discretionary. A penalty for an other-than-serious violation may be adjusted downward by as much as 95%, depending on the employer's good faith (demonstrated efforts to comply with the standard), history of previous violations and size of business. When the adjusted penalty amounts to less than \$100, no penalty is proposed.
- **Serious Violation** – A violation where there is substantial probability that death or serious physical harm could result and that the employer knew, or should have known, of the hazard. A mandatory penalty of up to \$7,000 for each violation is proposed. A penalty for a serious violation may be adjusted downward, based on the employer's good faith, history of previous violations, the gravity of the alleged violation and size of business.
- **Willful Violation** – A violation that the employer knowingly commits or commits with plain indifference to the law. The employer either knows that the act constitutes a violation, or is aware that a hazardous condition existed and made no reasonable effort to eliminate it.
Penalties of up to \$70,000 may be proposed for each willful violation, with a minimum penalty of \$5,000 for each violation. A proposed penalty for a willful violation may be adjusted downward, depending on the size of the business and its history of previous violations. Usually, no credit is given for good faith.

If an employer is convicted of a willful violation of a standard that has resulted in the death of an employee, the offense is punishable by a court-imposed fine or by imprisonment for up

to six months, or both. A fine of up to \$250,000 for an individual, or \$500,000 for a corporation, may be imposed for a criminal conviction.

- **Repeated Violation** – A violation of any standard, regulation, rule or order where, upon reinspection, a substantially similar violation can bring a fine of up to \$70,000 for each such violation. To be the basis of a repeated citation, the original citation must be final; a citation under contest may not serve as the basis for a subsequent repeated citation.
- **Failure to Abate Prior Violation** – Failure to abate a prior violation may bring a civil penalty of up to \$7,000 for each day the violation continues beyond the prescribed abatement date.
- **De Minimis Violation** – De minimis violations are those that have no direct or immediate relationship to safety or health. Whenever de minimis conditions are found during an inspection, they are documented in the same way as any other violation, but are not included on the citation.

Additional violations for which citations and proposed penalties may be issued upon conviction include:

- Falsifying records, reports or applications can bring a fine of \$10,000 or up to six months in jail, or both.
- Violations of posting requirements can bring a civil penalty of up to \$7,000.
- Assaulting a compliance officer or otherwise resisting, opposing, intimidating or interfering with a compliance officer while he is engaged in the performance of his duties is a criminal offense, subject to a fine of not more than \$5,000 and imprisonment for not more than three years.

Citation and penalty procedures may differ somewhat in states with their own occupational safety and health programs.

fail to establish energy control program requirements.

#6 POWERED INDUSTRIAL TRUCKS
(29 CFR 1910.178 – cited 1,993 times)

An in-house safety document specifically for powered industrial trucks, including forklifts and motorized hand trucks, will establish requirements for their design, maintenance and operation. Employees should be trained on the equipment's load, what to do when the truck could potentially tip over, speed limitations and seat belt requirements.

Violations occur during unsafe operations, or when operators are not properly trained and evaluated, trucks are still in operation although they require service, and trucks are not inspected before being placed into service.

#7 LADDERS
(29 CFR 1926.1053 – cited 2,310 times)

Ladder accidents are accountable for roughly 8% of all labor-associated deaths each year. Ladders and their requirements have become an increasing concern in the United States due to mishandling and failure to achieve safety. The mishandling and misuse of ladders continues to draw frequent violations. Violations occur when the minimum requirements are not met.

#8 ELECTRICAL, WIRING METHODS, COMPONENTS AND EQUIPMENT
(29 CFR 1910.305 – cited 1,744 times)

An in-house safety document specifically for electrical wiring methods will establish requirements and procedures for the examination, installation, use and testing of continuity and resistance of electrical power



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RESPIRATORY PROTECTION CAN BE AN ISSUE FOR ANY PRECAST PLANT IF NOT ADDRESSED PROPERLY.

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STATS FROM 2011 TOP 10 VIOLATIONS

While the breakdown of violations for fiscal 2012 has not been published yet, the Top 10 list remains very similar from year to year. Here is the breakdown of violations for fiscal 2011, which can serve as a guide for identifying potential safety hazards before they cause injuries.

TOP SECTIONS CITED	VIOLATION	NUMBER
#1 Scaffolding		
29 CFR 1926.451(g)(1)	Fall protection on scaffolds higher than 10 ft above a lower level	1,799
29 CFR 1926.451(b)(1)	Requires each platform on all working levels to be fully planked or decked between the front uprights and the guardrail supports	1,006
29 CFR 1926.451(e)(1)	Access requirements when platforms are more than 2 ft above or below a point of access; prohibits use of crossbars as an access means	972
29 CFR 1926.451(c)(2)	Requirements for a firm foundation of scaffold	735
29 CFR 1926.451(g)(4)	Guardrail provisions	516
#2 Fall Protection		
29 CFR 1926.501(b)(13)	Fall protection requirements for residential construction	2,979
29 CFR 1926.501(b)(1)	Fall protection for walking/working surfaces 6 ft or higher above lower levels	1,810
29 CFR 1926.501(b)(10)	Fall protection requirements for roofing activities on low-slope roof	895
29 CFR 1926.501(b)(11)	Fall protection requirements for a steep roof	607
29 CFR 1926.501(b)(4)	Protection from falling through holes	371
#3 Hazard Communication		
29 CFR 1910.1200(e)(1)	Requirements for a written hazard communication program	2,398
29 CFR 1910.1200(h)(1)	Hazardous chemical training and information requirements	1,353
29 CFR 1910.1200(f)(5)	Labeling of hazardous chemical containers	840
29 CFR 1910.1200(g)(1)	Material Safety Data Sheet requirements for chemical manufacturers and importers	634
29 CFR 1910.1200(g)(8)	Requirements to maintain copies of Material Safety Data Sheets that are easily accessible to employees	526
#4 Respiratory Protection		
29 CFR 1910.134(c)(1)	Where respirators are necessary, the establishment of a written respiratory protection program with worksite-specific procedures	712
29 CFR 1910.134(e)(1)	Medical evaluation to determine employee's ability to use a respirator prior to fit testing or use	656
29 CFR 1910.134(c)(2)	Requirements for voluntary use of respirators	554
29 CFR 1910.134(f)(2)	Annual fit-testing requirements for each type of respirator face piece used by an employee	348
29 CFR 1910.134(d)(1)	General requirements for respirator selection	314
#5 Lockout/Tagout		
29 CFR 1910.147(c)(4)	Requirements in energy control procedures	1,023
29 CFR 1910.147(c)(6)	Requirements to periodically inspect the energy control procedure	741
29 CFR 1910.147(c)(7)	Training and communication requirements	587
29 CFR 1910.147(c)(1)	Energy control program requirements	548
29 CFR 1910.147(d)(4)	Requirements for the application of lockout/tagout devices	203
#6 Electrical – Wiring Methods		
29 CFR 1910.305(g)(1)	Concerns the use of flexible cords and cables	940
29 CFR 1910.305(b)(1)	Requirements for conductors entering boxes, cabinets and fittings	880
29 CFR 1910.305(g)(2)	Covers identification, splices and terminations	713
29 CFR 1910.305(b)(2)	Requirements on covers and canopies	526
29 CFR 1910.305(a)(2)	Requirements on temporary wiring	153
#7 Powered Industrial Trucks		
29 CFR 1910.178(l)(1)	Safe operation of industrial trucks	813
29 CFR 1910.178(l)(4)	Refresher training and evaluation requirements	554
29 CFR 1910.178(l)(6)	Operator training and evaluation requirements	389
29 CFR 1910.178(p)(1)	Requires industrial trucks in need of repair to be taken out of service until restored to safe operating condition	300
29 CFR 1910.178(q)(7)	Requirements for examining industrial trucks before they are placed into service	271
#8 Ladders		
29 CFR 1926.1053(b)(1)	Requires ladder side rails to extend at least 3 ft above an upper landing surface, or be secured at its top to a rigid support	1,698
29 CFR 1926.1053(b)(4)	Use of ladders is restricted to only the purpose for which they were designed	446
29 CFR 1926.1053(b)(13)	Prohibits use of top or top step of a stepladder as a step	285
29 CFR 1926.1053(b)(16)	Requires defective ladders to be marked with a "Do Not Use" notification and withdrawn from service until repaired	202
29 CFR 1926.1053(b)(22)	Prohibits an employee from carrying any object that may cause the employee to lose balance and fall	90
#9 Electrical – General Requirements		
29 CFR 1910.303(b)(2)	Requires listed or labeled equipment to be installed and used in accordance with the instructions included in the listing or labeling	669
29 CFR 1910.303(g)(1)	Sufficient access and working space is required for all electric equipment to allow safe operation and maintenance of the equipment	651
29 CFR 1910.303(g)(2)	Guarding of live parts	442
29 CFR 1910.303(b)(1)	Requires electrical equipment to be free from recognized hazards likely to cause death or serious physical harm	326
29 CFR 1910.303(f)(2)	Requires disconnecting means for motors and appliances to be legibly marked to indicate its purpose	232
#10 Machine Guarding		
29 CFR 1910.212(a)(1)	Requirement for guarding to protect employees in the machine area from hazards	1,611
29 CFR 1910.212(a)(3)	Requirement concerning the point of operation guarding	710
29 CFR 1910.212(b)	Requires the secure anchoring of machinery for machines at a fixed location	206
29 CFR 1910.212(a)(5)	Specifies requirements for guarding of blades	127
29 CFR 1910.212(a)(2)	General requirements for the location of a machine guard	56

tools, equipment, power cords and receptacles to eliminate employee exposure to hazards. Electrical hazards include insulation, incomplete circuit devices, mislabeled circuit components, current conductivity, overhead lines, proper grounding, accidental start-ups and personal protection.

#9 MACHINES, GENERAL REQUIREMENTS (29 CFR 1910.212 –

cited 2,097 times)

One or more methods of machine guarding must be provided to protect the operator and other employees in the machine area from hazards such as those created by point of operation, ignoring nip points, rotating parts, flying chips and sparks. Examples of guarding methods are barrier guards, two-hand tripping devices and electronic safety devices. Guards must be affixed to the machine where possible or secured elsewhere if attachment to the machine is not possible, although the guard itself cannot pose a hazard.

Any machinery that can cause harm to your employees during operation must be protected under this standard. Common violations are seen when plants fail to apply a guard system, point of operation when guarding, secure anchoring of the machinery at a fixed location, specifications for guarding blades, and general requirements for the location of a machine guard.

#10 ELECTRICAL SYSTEMS DESIGN, GENERAL REQUIREMENTS

(29 CFR 1910.303 – cited 1,332 times)

General violations not covered in 29 CFR 1910.305 are found here. Special attention to circuit breakers, connection equipment, power cords, circuit identification, inspection of electrical equipment and guarding of live parts are frequent violations under this section.

** To get a more accurate breakdown of the most frequently cited OSHA standards in relation to your company*



NPCA file photo

PROPER LOCKOUT/TAGOUT PROCEDURES WILL PREVENT THE UNINTENDED RELEASE OF ENERGY.

size, input your plant-specific information at the referenced website.

Conclusion

Employers and employees have an important role in addressing and tackling safety-related concerns on a day-to-day basis. OSHA and NPCA have numerous resources to help educate and promote in-house plant safety procedures. Safety affects everyone, therefore safety procedures and processes should not be ignored or taken lightly even if the task seems to be tedious or routine. ■

Evan Gurley is a technical services engineer with NPCA.

SAFETY RESOURCES

Bureau of Labor Statistics
www.bls.gov

Canadian Centre for Occupational Health and Safety
www.ccohs.ca

Occupational Safety and Health Administration
www.osha.gov

NPCA Safety Resources
precast.org/safety

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AVOID EXPOSURE:

Proactive Claim Preservation and Insulation Practices

Understanding the legal requirements, proper documentation and contract administration is essential for claim management.

BY JOHN A. GREENHALL AND LANE F. KELMAN

The internal business practices you maintain play a significant role in providing ammunition for defending or prosecuting a legal claim. A protocol should be in place that requires contract review and integration of contract terms into your everyday practices on a project-by-project basis. Each project potentially presents its own unique legal, contractual and statutory requirements that, in turn, require communication among all team members in order to preserve or protect your bottom line.

The establishment of good business practices should apply to all contracts, not just those of a certain value. Too many contractors use basic purchase orders for contracts under a certain value or limited scope. The contract value, however, does not lessen your exposure. A \$10,000 contract can easily become a \$100,000 liability. Regardless of the type or form of the contract, make sure to include important terms. Enforceable limitation of liability clauses, payment terms, insurance requirements and termination rights, and damage provisions are critical. When you receive an award, what process do you have in place for the contract issuance and review?

Add your own proposal

The contract often contains an integration clause, which voids any proposals or oral agreements. As such, it is important that you include your proposal as an attachment in the contract. The proposal may contain contradictory terms to the contract itself. The contract itself should contemplate the inclusion of a proposal and address the possibility of contradictory terms and provisions. In a recent dispute, the terms that comprised an erection subcontract valued at \$8,000 were at issue. After

precast panels were erected at a residential project, a problem was discovered that required the removal and reinstallation of all panels, and a significant delay ensued. The body of the subcontract contained language that obligated the erection subcontractor to reimburse the general contractor for all costs and damages – just under a million dollars.

A dispute arose because the subcontractor's proposal was included as a contract document, which included a limitation of liability clause that, according to the subcontractor, capped damages at the value of the subcontract. Clearly, the general contractor failed to identify and address the conflicting terms and limitation of liability clause prior to entry of the contract. As a result, the subcontractor successfully argued that its proposal controlled.

Familiarity with and command of key terms is of paramount importance. Having the right team in place when reviewing and issuing contracts is crucial. Be mindful that the clauses you negotiate may vary depending upon whether you are issuing the contract or serving as the downstream contractor. The potential for a difference between payment terms in the prime contract and those in a subcontract or lower agreements is significant and such differences must be recognized and remedied through the contract drafting.

The relationship between the payment terms needs to be addressed when reviewing subcontracts. If the fabricator has a contract with the prime contractor that contains a conditional payment clause, payment terms for the fabricator's erection subcontractor should contain the same conditions. Otherwise, if a dispute arises between the prime contractor and fabricator that results in non-payment, the fabricator may still have payment

obligations with the erection subcontractor that must be met. The relationship between the upstream and downstream contract clauses must be reviewed on a project-by-project basis.

Lien waivers

In many cases, in order to receive a progress payment, you must submit a partial lien waiver and release. Increasingly, the partial lien waiver and release contains language that releases much more than lien rights and instead expands to all claims. Change orders often contain similarly broad waiver and release language. Are you unknowingly waiving your rights?

In addition to preventing exposure, steps need to be in place that preserve claims. Communication between your accounting department and field personnel is important. Too often, a disconnect exists between departments, and, while the left hand is in the midst of a developing claim, the right hand is signing monthly releases that waive the claim. A system needs to be in place where important dates for each contract are noted and monitored by the appropriate departments and personnel. For example, every jurisdiction has different statutory requirements in order to file a lien claim. Likewise, each bond has distinct requirements for making a payment bond claim. These requirements mandate that certain steps be taken by a deadline or the claim may be forever barred as untimely. An understanding by your team of the various requirements and the importance of proper review and communication is paramount to claim preservation.

A recent project gone awry in Virginia also carries an important lesson. Halfway through construction, the developer ran out of money and the project was suspended. Two months after suspension, the general contractor's contract and, in turn, the subcontractors' contracts were terminated for convenience. The project was not bonded. Therefore, the only means of recovery were via lien or through the general contractor. In Virginia, you can only lien for work done in the last 150 days. The precaster filed a lien but it was not for the full amount owed due to the time limitation. However, the precast subcontractor realized it could also pursue the general contractor.

While the standard form contract issued by the general contractor contained a payment clause where payment was contingent upon the general contractor being paid (also known as a "pay if paid" provision), the precast subcontractor was the only subcontractor to modify the boilerplate language. Because of that pre-emptive and protectionist action, it removed a significant legal hurdle to its recovery. Therefore, while other subcontractors received only cents on the dollar through the lien process, the precaster received a very favorable settlement. The general contractor had direct exposure, and resolution was reached.

Going public

Public projects are equally problematic and informative. A recent county prison project in Maryland highlights the need to properly document and preserve claims. The project was bid in a haphazard, piecemeal fashion as portions of the contract documents became complete, including the precast package.

The construction manager failed to make sure that earlier bid packages were consistent with later ones. More than 100 major drawing changes were made during construction. Because of the lack of proper scheduling by the construction manager and its lack of coordination, the project was delayed for more than seven months.

Ultimately, the construction manager issued a revised schedule that varied significantly from the schedule in the bid documents. The owner and construction manager requested that the precast contractor sign-off and thus approve and adopt the revised schedule. In response, the precast contractor sent a notice letter that explained how the bid schedule showed a floor-by-floor construction, but the revised schedule changed to a pod-by-pod sequence. The letter also informed the owner that much more manpower would be needed to meet the revised schedule and requested a change order as a result of the change in sequence. Predictably, the owner refused to issue a change order, and a formal claim was pursued.

Because of proper documentation, the precast contractor demonstrated that it rejected the revised schedule, that the construction manager was responsible for the lack of coordination and scheduling, and that its failure to do so resulted in impacts and damages to the precast contractor. The paper trail created by the precast contractor enabled it to not only preserve its claim, but prevail.

Remain proactive

Both of these projects serve as good examples of proactive protocols put in place by the respective precast contractors. With no up-front review and negotiation, the precast contractor on the Virginia project would have been confronted with a "pay if paid" defense by the general contractor. In addition, the termination of the contract was likely timed to jeopardize lien rights, yet the contractor was aware of the statutory deadline and prepared to proceed with its lien. On the prison project, claim documentation and notice were key. Rather than explicitly or tacitly accepting the revised schedule, it was rejected by written notice. Detailed documentation as the claim developed ensued, including the written proof of increased manpower costs and delay notification.

The bottom line is excellent on-site coordination that leads to the successful completion of a project must be duplicated at the home office as well. Establishing good, standard practices for your team, such as contract review and written notices, protects the profit margin. From estimating through close-out, communication, coordination, and awareness of your rights and obligations are the keys to a truly successful project. ■



John A. Greenhall



Lane F. Kelman

John A. Greenhall and Lane F. Kelman are Partners at Cohen Seglias Pallas Greenhall & Furman PC. Both practice in the Construction and Green Building Sustainability Practice Groups. They can be reached at (215) 564-1700, jgreenhall@cohenseglias.com or lkelman@cohenseglias.com.



Recent events prove that disaster preparation pays off for businesses, so why aren't more companies taking the time to prep in advance of possible disasters?

BRACING FOR THE WORST

BY BRIDGET McCREA

When Hurricane Sandy tore through portions of the Caribbean, the mid-Atlantic and the entire Northeast in late October, it carved out a path of destruction that few could have predicted. The devastating hurricane not only claimed 253 lives, but also created damage and business interruption losses of about \$65.6 billion, making it the second-costliest Atlantic hurricane – second only to 2005's Katrina. Many companies were left under water, burned to the ground, or otherwise unable to open and operate in a "business as usual" manner.

The fact that Hurricane Sandy took its toll on the nation's businesses should come as no surprise. According to the U.S. Small Business Administration (SBA), businesses invest a tremendous amount of time, money and resources to make their ventures successful, yet many fail to properly plan and prepare for disaster situations. Ignoring the need for such planning can prove fatal for businesses of any size. According to the Institute for Business and Home Safety, an estimated 25% of businesses do not reopen following a major disaster.

"It doesn't matter if you're making concrete forms or if you're making widgets, there's a set of baseline steps that all companies need to take in order to be able to carry on after a disaster," says John H. Clouse, a consultant with The Joseph Group, a disaster and recovery consultancy in Owensboro, Ky. "In the case of Hurricane Sandy, for example, everyone knew that the storm was coming, but no one really thought that level

of destruction would really take place."

Most companies ignore the need for good disaster planning and instead stay laser-focused on the day-to-day operational tasks, which is at least partially to blame for the oversight, says Clouse. Other culprits include an "it can't happen to us" attitude and an unwillingness to put money and time into developing a plan that may never be dusted off and put to use.

"Many organizations just go through the motions of creating emergency plans in order to meet inspector or regulatory requirements, but they never truly develop actionable, useful plans for recovering after a disaster," Clouse points out. "Also, no one ever considers whether these plans will work or not – via testing and ongoing modifications – in the event of disaster. As a result, the plans are basically useless."

Measuring the impact

Any precaster who thinks the plant won't be brought to its knees by a destructive storm, earthquake, fire or other disaster may be surprised by some of the statistics Clouse shared. He says that any manufacturer reliant on computerization – a group that includes most of today's precast manufacturers – is particularly vulnerable to business interruption due to disaster. Loss of power, which firms in the New Jersey/New York/Connecticut area endured for weeks after Hurricane Sandy, can cripple companies – a full 40% of which will not reopen after going without power for as little as 10 days.

“Even the firms that do open after being without power for 10 days will be closed for good within the following 20 to 24 months,” says Clouse, who adds that very few firms have contingency plans for being without power for 10 or more days. “The assumption is that the power will come back on quickly, but weeks after Sandy we still saw areas of the East Coast without stable electric facilities and solid connectivity.”

Precasters looking to buck the trend can use reverse engineering to come up with contingency plans in the event of power loss or other peril. Clouse says manufacturers should use a checklist similar to this one to start the exercise:

- On a “normal” day product X is on a truck and ready to roll out of the yard
 - How did product X get from the raw material stage to the point of being put on that truck?
 - Where is the potential for a bottleneck and/or breakdown?
- Is it getting materials from my suppliers?
- Is it in transporting the product away from my plant to the distribution area?
- Is it within my plant, such as internal electricity?
- Is it automation and, if so, can we function without this automation if we lose power?

Using this reverse-engineering process, precasters can pinpoint the weak spots in their operations and/or supply chain and come up with ways to address those bottlenecks. Ignore profitability and sales for the moment, Clouse says, and look only at what it takes to get your precast products from the raw

material stage and out the door to the customer location. “If you can’t produce, you’re out of business,” he says, “so look very carefully at what can make your business not function properly and address those issues first.”

Tapping your resources

Planning ahead for disasters and the subsequent recovery phase is comparable to untying a knot. The key is to look for loose ends first and then spend time working those loose ends until the knot is worked out, says Clouse. Once the loose ends are identified (via the reverse engineering process described above), it’s time to look at what internal and external resources are at your disposal and capable of fixing the major issues that surfaced.

In some cases, disaster planning can be as straightforward as an emergency generator in case of power loss and off-site data backup for important files. In other situations, it could mean reaching outside of traditional company boundaries to find external sources of support. A precast company that makes manholes in its New York plant, for example, could partner with an NPCA member in Indiana or Kentucky to temporarily fill orders in the event of emergency.

“That will allow the precaster to maintain a basic level of operation in the event of a disaster,” says Clouse, “and to keep things moving forward while cleanup, repair and recovery efforts are underway.”

Business interruption insurance is another key consideration for precasters, as Greg Roache, president at Gainey’s Concrete

TAKING A PROACTIVE APPROACH

While it’s nearly impossible to predict where disaster will hit next, there are ways to plan ahead for even the most unexpected situations. “It is far more cost- and resource-effective to prevent crises, or minimize the chances of crises occurring, than to merely respond to them,” says Jonathan Bernstein, president of Bernstein Crisis Management Inc. in Sierra Madre, Calif. He advises precasters to tackle the planning process from these four angles:

Vulnerability/Risk Assessment: This is a multidisciplinary risk assessment that determines current and potential areas of operational weakness and strengths and potential solutions, because identified weaknesses may result in emergencies or crises of varying magnitudes if not corrected. “Examine every functional area of your organization to recognize anything that could lead to a significant interruption in business and/or reputation damage,” says Bernstein.

Analyzing and Reporting Results/Writing Crisis Plan: Once the vulnerability/risk assessments are conducted, manufacturers should use the results to identify challenges to effective crisis prevention and response – human or system – and come up with ways to overcome those challenges. Mobilize a “crisis

communications team” (made up of key managers, owners and employees) to review and modify the recommendations. The team should also discuss scenarios that are most likely to affect the organization and come up with a final list of “most likely” scenarios. Then create a manual that will “guide the entire organization in the communications aspects of responding to crisis situations,” says Bernstein.

Training: Employee and manager training is one of the most important components of any crisis management plan. Break down the training into these categories: executive/management orientation; employee orientation; and media training (so that employees know what to say when the reporters come calling, for example).

Crisis Plan Testing and Validation through Emergency Exercises and Simulations: How well will your crisis plans, and the people charged with executing them, perform when the next crisis strikes? “The best time to answer that question is before the crisis strikes,” says Bernstein, who advises manufacturers to conduct and/or oversee realistic simulations of crises that could affect the company.

FEMA'S 5-STEP DISASTER PLANNING OUTLINE

According to the Federal Emergency Management Association (FEMA), businesses can do much to prepare for the impact of the many hazards they face in today's world, including natural hazards like floods, hurricanes, tornadoes, earthquakes and widespread serious illnesses such as the H1N1 flu virus pandemic. Human-caused hazards include accidents, acts of violence by people and acts of terrorism, while technology-related hazards are the failure or malfunction of systems, equipment or software.

Here, FEMA maps out the five steps that companies should follow when developing a preparedness program:

1. PROGRAM MANAGEMENT

- a. Organize, develop and administer your preparedness program
- b. Identify regulations that establish minimum requirements for your program

2. PLANNING

- a. Gather information about hazards and assess risks
- b. Conduct a business impact analysis (BIA)
- c. Examine ways to prevent hazards and reduce risks

3. IMPLEMENTATION – WRITE A PREPAREDNESS PLAN ADDRESSING:

- a. Resource management
- b. Emergency response
- c. Crisis communications
- d. Business continuity
- e. Information technology
- f. Employee assistance
- g. Incident management
- h. Training

4. TESTING AND EXERCISES

- a. Test and evaluate your plan
- b. Define different types of exercises
- c. Learn how to conduct exercises
- d. Use exercise results to evaluate the effectiveness of the plan

5. PROGRAM IMPROVEMENT

- a. Identify when the preparedness program needs to be reviewed
- b. Discover methods to evaluate the preparedness program
- c. Utilize the review to make necessary changes and plan improvements

Products Inc. in Holden, La., found out in the aftermath of Hurricane Katrina eight years ago. Business interruption insurance (also known as business income insurance) covers the loss of income that a business suffers after a disaster while its facility is either closed because of the disaster or in the process of being rebuilt after it. The coverage kicks in where most standard business insurance policies leave off, namely because the latter only covers loss or damage to tangible items (equipment, inventory, warehouse, office or plant) and not lost profits if your business cannot operate.

Unfortunately, Gaaney's business interruption insurance coverage wasn't meant to cover the kind of losses that the precaster experienced after Katrina. "It wasn't until after the storm that we realized our business interruption insurance was only valid under certain conditions," says Roache. "If our silo had blown over or a power outage caused work to be interrupted, we would have been covered. With Katrina, our customers all went away, and we weren't covered."

Roache, who has since added the necessary coverage for the business, says his precast manufacturing firm lost most of its customers and sales – and a lot of its employees – as it dug its way out of the catastrophic storm's aftermath. He says the firm's written disaster response planning – which included a written plan, generators for alternate power, employee media training and disaster response testing – all proved valuable during that tumultuous period.

To precasters who haven't taken the time to plan for the inevitable, Roache says to start now and don't wait. "You either have to be prepared for the loss of business or insured for it," says Roache. "Ignore this fact and you may wind up with significant losses and possible closure in the event of a disaster."

Taking the first steps

As the nation's businesses move toward a state of normalcy and away from the last disaster, complacency begins to set in. Disaster planning gets put on the back burner, and that "it can't happen to us" attitude kicks back into gear as business returns to normal. "Any money that was allocated to disaster planning is routed elsewhere, and all thoughts of planning for the worst fall by the wayside," says Clouse. "Companies – most of which are not situated in areas where disaster strikes on a regular basis – talk themselves out of the need for disaster planning and go about their business."

Jeff Karrenbauer, president at supply chain planning solutions provider INSIGHT Inc. in Manassas, Va., concurs, and says that even the Fortune 10 companies that he works with "can't be bothered with planning for the worst." Most do have some form of disaster planning in place, but much of it is based on traditional phone trees (calling one employee who in turn calls 10 more to alert them of an incident) and other ineffective methods.

"Most companies really don't have a Plan B that they can turn to when their operations and/or supply chain are interrupted," says Karrenbauer. "Strategic planning that's set for the coming year can quickly slip into the next year and no one ever gets around to doing it." Precasters can get around that obstacle by making the commitment to start disaster planning; getting buy-in and support for the project from the CEO; and assembling a team of individuals (across various departments) to participate in the exercise.

"The most important thing is to lose that 'it ain't gonna happen to me – it's always the other guy' attitude," says Karrenbauer, "and realize that it can happen to you and you can do something about it with the proper level of planning, training and preparing for all of the 'what if?' scenarios that you can come up with." ■

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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DETAIL A
SCALE 1 : 20



Safety when Welding

BY NICK MAY

In welding and fabrication shops, the safety and welfare of employees is first and foremost. When welding, whether on large commercial projects, small local buildings or fabricating welded cages, many safety procedures must be considered before starting the project. This includes proper equipment that meets safety regulations; secure surroundings; an efficient workplace with appropriate lighting and comfortable temperature; easily accessed equipment and materials; and, of course, first aid and safety equipment.

OSHA outlines several regulations that pertain specifically to welding, and more than 25 states have their own specific regulations, so you should familiarize yourself and your crew with all pertinent standards. Here we will outline three areas that can help keep welders and others in the shop safe.

Safety equipment and clothing

Safety equipment is a must when welding. Start with gauntlet-style welding gloves that are dry and water resistant with no holes or tears, a welding helmet and either a heavy cotton shirt

or a jacket made specifically for welding. Wear heavy boots and pants that cover the tops of the boots. Make sure you are not wearing loose or long pieces of clothing. When welding in a confined space, use a welding helmet with forced air or use respirators.

Respirators should be applicable and suitable for the purpose intended. Depending on the type of respirator, the employee may have to be fit-tested as well. This requires a medical evaluation.

You should prepare a large and heavy surface for welding. The welding table should be sturdy enough so that it won't tip over, especially when working with extremely hot metal. In case of fire, all employees should know where the closest fire extinguisher is located, and all extinguishers must be fully charged. In special circumstances, post an assistant to act as a fire watch.

Never weld on drums, tanks or any closed containers unless properly trained and qualified personnel have authorized it.

Secure your surroundings

Make sure your surroundings are safe and secure. Remove flammable material from the work space, including paper, clothing, combustible items and liquids. Frequently check that all wires and electrical circuits are functioning and not damaged. Any damaged electrical outlets or wires must be tagged and replaced before returning them to work. Turn off and disconnect all equipment when not in use, out of service or damaged.

Read all instructions and manuals before operating welding equipment. To keep from tripping or falling, make sure the work area is clutter-free and prohibit horseplay. Welding curtains may be used to contain welding activities. Get to know and understand the safety guidelines that apply to other shop equipment as well, including grinders, saws, hand tools and machinery.

When welding galvanized or painted surfaces, toxic fumes may be released. Remove the coating by grinding prior to welding. Use a respirator, even in a well-ventilated area or when welding outdoors. Certain types of metals also require the use of a respirator. Make sure all people welding are trained and qualified for the job.

Ergonomics

Convenience in the welding workplace should be a priority. Ergonomics is the science of specific design for efficiency. Design the work area with input from your welders. Consider the materials your welders will need and place them within reach.

The lighting, temperature and noise levels should also meet the needs of the workers. The welding environment should be well-ventilated, using fans and extraction devices to remove fumes from the immediate breathing zone and welding area.

Keep the welding area free from containers of combustible materials, paper, cloth, paint, oil or grease. Be cognizant of where others are working and what they are doing, as sparks from welding can travel some distance from the welding area. Always warn co-workers when you are about to start welding.

Welding arcs produce intensely brilliant light including visible, infrared and ultraviolet (UV) rays; UV can cause permanent eye damage. People who visit precast plants during production should be cautioned to not look directly at the bright light from welding operations; ordinary sunglasses do not provide eye protection.

Conclusion

The above safety tips may seem very basic, but they can prevent injury. Established safety standards can easily be forgotten, especially when pressed for time – even for veteran welders.

For further information on the safety procedures required for welding, refer to OSHA section 1910.252 for general requirements and outlines. ■



Nick May is the purchasing manager for AH Harris & Sons Inc.



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WITH ONLY A HANDFUL OF EMPLOYEES, CGM PRECAST NOT ONLY CATERS TO INDIVIDUALS BUT CAN HOLD ITS OWN FOR MAJOR PROJECTS.

STORY AND PHOTOS BY RON HYINK

If anyone fits the description of a “big, little company,” it’s CGM Precast Concrete Inc. in Indianapolis. With just 13 employees – and four of them are the owners – CGM can quickly cast small landscaping items for a walk-in homeowner or contractor, and yet keep pace with the demands of a large, state-funded project. Its owners offer their customers personal, professional attention. They can have molds custom-made for you or you can bring in your own. Then they’ll roll up their sleeves and get to work with the rest of the crew. Chuck and Terrie, along with Fred and Susan Machledt are truly your people next door – and yet they are business owners to the core.

As small as it is, CGM has grown tremendously over the past few years, but it has grown intelligently by being economically conscious. The Machledts have added only those product lines that fit their niche, have stepped outside that box only when deemed profitable, outsourced labor where it makes sense, and have been passionate about keeping overhead costs as low as possible.

In addition to its original specialty as a utility pad manufacturer, CGM has included products such as wall caps, sills, copings and landscaping products. But it can hold its own for the larger projects such as MSE wall caps for an Interstate highway, and blocks that form the retaining walls that protect the power house and hold back river currents for a new hydroelectric plant.

OUTSIDE THE BOX

“If it’s architectural precast, the smaller items, we provide a true variety,” said Chuck Machledt, owner and president whose initials comprise the company’s name. For items such as concrete steps, tilt-up walls or pipe that they don’t make, they’ll refer the job to other companies that do – and likewise will get referrals from them.

Occasionally a request will float in for an unusual piece that no one else makes, and the Machledts will give it every consideration. As one successful custom project begets another, pretty soon word gets around and more requests come in for customized products.

“That’s how we generated the business we have now – stepping outside the comfort zone and saying, ‘I don’t know why we can’t do this, it seems we know where and how to get quality molds made, and there’s no reason not to give it a good look,’” said Chuck. “And we continue to do that.”

One of CGM’s most publicly recognized projects can be found in downtown Indianapolis along Georgia



PRECAST PLANTERS AWAIT A CONTRACTOR FOR SANDBLASTING.

A MEMORIAL IN DOWNTOWN INDIANAPOLIS SHOWS LEGENDARY BASKETBALL COACH JOHN WOODEN, WITH PLAYBOOK IN HAND, ENERGIZING HIS PLAYERS WEARING THE SHOES AND SOCKS REPRESENTING THE VARIOUS PERIODS OF HIS CAREER. THE BRONZE SCULPTURE, TILTING TOWARD THE FRONT, RESTS ON AN INTRICATELY DESIGNED, FOUR-PIECE PRECAST BASE WITH LETTERING SLANTED TO PARALLEL THE BASE.

CGM PRECAST



A DECORATIVE WALL FOR A LOCAL UNIVERSITY REQUIRED THAT FOAM PIECES BE READJUSTED FOR EACH DAY'S POUR.

“Everything that’s made with white cement on Georgia Street would have come through here.”

– CHUCK MACHLEDT, OWNER CGM PRECAST

Street, which underwent major reconstruction in preparation for the 2012 Super Bowl XLVI. Above ground, the project included precast concrete streetlight bases, memorial signs bearing the names of personalities from Indiana such as Benjamin Harrison and Ernie Pyle, and the base for the monument commemorating legendary basketball coach John Wooden. “Everything that’s made with white cement on Georgia Street would have come through here,” said Chuck.

The John Wooden memorial sculpture proved to be one of CGM’s most challenging projects. The casual observer will see a concrete base supporting a bronze sculpture, but another precaster, explained Chuck, will recognize that a lot went into the base’s design. First of all, the base is tilted along the top surface, and so the lettering cast into the base had to run parallel with the tilt. “It’s not just tilted one way, it’s tilted a couple of ways – and there are four pieces that make up the concrete sculpture base, and each one is different,” said Chuck. Also, if it didn’t come out right the first time, the process would have to be started all over again with new bronze lettering and modified molds. “So we wanted to make it right the first time, and fortunately it came out wonderfully,” said Chuck. “It’s one of our shining stars.”

The Georgia Street project spawned other downtown projects for CGM, such as sidewalk curbing, custom parking stops, shower curbs, and wall caps for the Omni, the Marriott, NCAA Headquarters, and other hotels and businesses. These high-profile, one-off custom projects are typically difficult to create, but CGM’s reputation for completing a project on or ahead of time has caught on, said Chuck. “It’s more profitable, because everybody’s not chasing it, and not everybody can do it,” he said. “Those are more our kinds of projects.”

Other high-profile projects have included providing wall copings for the major

STREETLIGHT BASES ALONG GEORGIA STREET WERE A CHALLENGE BECAUSE OF ALL THE ANGLES AND THE NEED FOR PIVOTING HATCHES TO ACCESS THE ELECTRONICS.



I-70 upgrade going through Indianapolis, and then there was the decorative screen wall for IUPUI (Indiana University-Purdue University Indianapolis) that required carved foam pieces to be readjusted for each day's pour. "It was a very complicated thing to do," said Chuck.

"Our largest project so far has been the Cannelton hydroelectric power plant project on the Ohio River," said Susan, the company's CEO. "We're making the block that goes into walls to protect the hydroelectric plant."

The blocks will also serve to hold back part of the river allowing some of the river water to push through the big turbines – and so it needs a lot of blocks. "There are about 12,000 pieces and 300 flatbed truckloads," said Chuck. To minimize the need for extensive yard space at CGM, the blocks are stacked on flatbed trailers as produced – a process that also cuts delivery time. "We bought an extra trailer just so we can keep a trailer loaded and ship as many as two trucks a day. If we had to store it, that would just eliminate space for other things we could be doing at the same time," he said.

At the other end of the spectrum, CGM also caters to the need for small projects. "People will drive past and see the splash block that goes under a downspout, and ask if we would sell just one," said Susan. "Or a homeowner might want some stepping stones, or a church might need new or replacement

parking stops and want to know if they can purchase six. If a homeowner needs a porch cap, we can do that. We can build molds in-house and have the custom cap ready in a day or two, or sometimes people make their own molds and bring them in and we fill them with our concrete. We've done that for people who want to build their own countertop or are trying to do an outside kitchen area."

GROWING OUT

Chuck started CGM Precast in Tarpon Springs, Fla., out of his desire to right a sinking ship left by his former employer. Chuck was the salesman bringing in jobs for glass fiber-reinforced concrete (GFRC) mounting pads used by phone companies and various architectural products, but his employer kept pushing sales even though the company could not keep up with production. "And then I'd have to go out and talk to my customers about why that company couldn't perform," said Chuck. The employer went bankrupt, and in 1989 Chuck purchased many of the assets.

Chuck grew the company to a certain point, and even acquired some high-profile bids such as wall panels for the Tampa Airport. But then came the time when he knew he had to bring in some qualified people to help him run the business. "It seemed like I never had just that right person you could depend on and



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CGM'S NEW PRODUCTION BUILDING INCORPORATED HIGH SOUTH-FACING WINDOWS FOR NATURAL LIGHT.

“My approach to upgrading and enlarging our production facility has been to make changes that will consistently serve to minimize our future costs.”

– SUSAN MACHLEDT

trust,” he said. “I was explaining to my brother my concern to get the right combination of management and staff needed to ensure success.” Chuck asked Fred (his brother) to join him in the precast business, but rather than Fred moving to Florida,

Chuck moved the entire operation to Indianapolis. Chuck was already shipping product out of state, and there were difficulties with leasing business property in Florida at the time, so the move to Indianapolis in 1998 turned out to be a wise decision.

“I was fortunate that Fred was willing to stop what he was doing and take a chance on helping grow this,” said Chuck. “It’s worked out well with him being very organized.” It also afforded the time Chuck needed to pursue additional bids for architectural precast products in the construction of new Wal-Mart and other big-box stores.


The property they purchased in Indianapolis was larger than was needed at that time. “We rented some of the space to other companies,” said Susan. “But then as we would grow, we would reclaim more and more of our building. This approach helped, and we didn’t have to move to expand.”

One of the sections now houses a batch plant and two sets of aggregate bins, all completely enclosed within the building. “Our batch plant was purchased from Mixer Systems. The sales representative was instrumental in suggesting how their equipment could offer maximum output within the space I had,” said Fred. “Two sets of bins allowed for one set with aggregates to be warming and drying while the other set of bins is in active use.”

As production increased and the extra work space disappeared, they added additional production space to their building. As they continued to grow, they decided to put in a new, larger production area adjacent to the original building that could accommodate larger projects. But putting up the new building presented some challenges. “Our planning has been dictated by our existing building and limited by our lot size,” said Fred.


Installing another batch plant in the new building would prove difficult, as new water lines would have to be extended to the far side of the original building. And there were other considerations. “We were not certain that we could justify the loss of interior space or the large investment of a second batch plant,” said Fred.

The answer was to use ready-mix. “We have a half-yard mixer, so to do something that requires 10 or 20 yards of mix daily, it makes more sense for us to just buy the

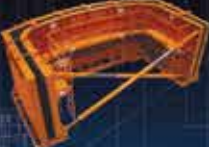


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mix," said Susan. "So we can still have both production areas going at once. The ready-mix provider is able to duplicate our approved mix designs."

ECONOMICALLY CONSCIOUS

A great deal of thought went into the design of the new building. "My approach to upgrading and enlarging our production facility has been to make changes that will consistently serve to minimize our future costs." The bay doors, for example, were made with the ready-mix trucks in mind. "The ready-mix trucks can drive right in, dispense the mix and drive right out," said Susan.

But there is much more. The new building has proven to be a role model for energy efficiency. "We invested in building insulation for the walls and ceiling, and lots of high south-facing windows for natural light," explained Fred. "We installed a 1,500-gallon tank to harvest rain water from the exterior gutters. This water is used mainly for cleaning equipment and molds, but it saved us from adding a water well or piping city water from the far west side of our property." He also installed high-efficiency lighting and radiant heating in quadrants that can be switched on in the areas as needed. "This allows us to heat and light only the areas in our building that are in use."

The new production building was also pre-engineered for craneways, although there was no immediate need for them. "Now we use these cranes frequently and have not had to add any interior support posts for the crane beams," said Fred.

The new building saves a great deal on utility costs, but the Machledts use other methods as well to lower overhead costs. For example, welding of new molds and sandblasting are such a small part of their overall production that it makes sense to outsource those operations to specialists. That avoids the expense of investing in additional equipment, taking up valuable space to store it, and training employees how to use it – not to mention all the inherent safety hazards and the costs to control them.

Fiberglass and steel molds for the smaller projects are typically outsourced as well. "We found some wonderful fabricators here locally who can be very responsible and affordable, and then those molds tend to last much longer than if we made them ourselves," said Susan. CGM will make molds for a small project or single use, or customers will sometimes bring in their own, but like the other outsourced tasks, mold-making requires expensive and quality equipment. It would be another unnecessary expense with minimal returns.

To satisfy state project requirements, hauling numerous heavy concrete test cylinders every week to be tested for strength became laborious and expensive, so it made sense to purchase their own break-test equipment. "We needed to do that anyway, being an NPCA certified plant," said Susan. "So we are able to do testing now, and customers seem to appreciate that we can tell them the strength of that particular product they are purchasing from us."

Not only is CGM Precast an NPCA Certified Plant, it has attained the Top 25 of all plants for certification inspections. "We score pretty high every year," said Chuck. "While customers are waiting in our office, they can look at pictures of some of the jobs we've completed and see the certifications. Especially when architects and GCs come in here to discuss a future project and wondering if it's something we can do. When they see the certification and that we're one of the Top 25, they typically don't have to ask that question."

What are the next steps for this small but growing company? Whatever they are, the Machledts are certain to scrutinize every action, and wherever it leads them, they'll likely retain their next-door-neighbor disposition. ■

Ron Hyink is NPCA's managing editor.

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Water-Reducing and Set-Controlling Admixtures

BY CLAUDE GOGUEN, P.E., LEED AP

According to the American Concrete Institute (ACI), an admixture is defined as “a material other than water, aggregates, cementitious materials and fiber reinforcement, used as an ingredient of a cementitious mixture to modify its freshly mixed, setting or hardened properties, and that is added to the batch before or during its mixing.”

The most common types of chemical admixtures are water-reducing and set-controlling chemicals. Water-reducing and set-controlling admixtures offer precasters real advantages in improving their production capabilities. Water-reducing admixtures are used to produce concrete of higher strength, obtain specified strength with lower cement content, and increase the slump of a given mixture without an increase in water content. Water-reducing admixtures also improve the properties of concrete containing aggregates that are harsh or poorly graded, or both. Or they may be used in concrete placed under difficult conditions. Water-reducing admixtures can be very beneficial in producing high-strength concrete with a low water-cement ratio.

Types of water-reducing and set-controlling admixtures

The American Society of Testing and Materials (ASTM) specification C494 covers eight types of chemical admixtures:

- Type A – Water-reducing admixtures
- Type B – Retarding admixtures
- Type C – Accelerating admixtures
- Type D – Water-reducing and retarding admixtures
- Type E – Water-reducing and accelerating admixtures
- Type F – Water-reducing, high-range admixtures
- Type G – Water-reducing, high-range and retarding admixtures
- Type S – Specific performance admixtures

Water reduction

Each of these admixture types is defined by the range at which it decreases water. Types A, D and E must reduce the water content by at least 5%. Types F and G are high-range water-reducing (HRWR) admixtures and are required to reduce the water content of a concrete mix by at least 12%. This may, in some circumstances, decrease the water content of a

mix by 30% or more. Types B and C have no water-reducing requirements.

There is also a class of water reducers called mid-range water-reducing (MRWR) admixtures that reduce the water content from about 6% to more than 12% while maintaining slump and avoiding excessive retardation. Generally, this class of water-reducing admixtures falls into either the Type A or F category. Mid-range water reducers were developed to fill in the gap between Type A admixtures capable of producing a 5-in. slump and Type F admixtures capable of producing a 12-in. slump. They have proven very effective with the use of fly ash and other cement substitutes.

Type A – Water-Reducing Admixtures

Type A water reducers typically decrease the water content of a concrete mix by 5 to 10%. With all admixtures, the results and dosage rates will vary with the cement and other materials used. A typical dosage rate for Type A is between 2 and 6 fl oz per 100 lbs of cementitious materials (130 to 390 mm per 100 kg). Most Type A water reducers are composed of organic materials that act as set retardants. Other ingredients are added during manufacture to provide “normal” setting time. Excessive dosage rates will retard the setting time of concrete. Dosage rates should conform to the manufacturer’s recommendations and be tested in trial batches.

Type B – Retarding, and Type D – Water-Reducing and Retarding Admixtures

Retarding admixtures cause a decrease in the hydration rate of hydraulic cement and an increase in the setting time of concrete. Retarders are used to offset the effect of high temperature and improve the workability of concrete in warmer temperatures. Benefits of retarders include reduced cold joints and better finish in hot weather. While retarding admixtures can be beneficial, they are not a substitute for good hot-weather concreting procedures.

There are some retarders that can stop or significantly slow the hydration of portland cement. These are known as hydration stabilizers. Hydration stabilizers are used primarily in the ready-mixed industry to control the set time of concrete wash water, unused or returned concrete, and for long hauls. Hydration stabilizers may be beneficial in concrete that is steam cured. Precasters who use ready-mixed concrete should check with their suppliers to see what admixtures are available.

Type C – Accelerating, and Type E – Water-Reducing and Accelerating Admixtures

Accelerators are used to shorten setting time and to increase early strength development. Precasters can benefit by using accelerators, as they reduce bleeding and allow earlier finishing. Accelerators also increase early strength, which can protect the concrete from freezing, and they allow for faster removal of forms. Accelerators are available in chloride and non-chloride compounds. The use of chloride-based accelerators in reinforced concrete subjected to weathering should be avoided.

Accelerators do not act as antifreeze for concrete. Good cold-weather concrete practices must be followed.

Type F – High-Range Water-Reducing, and Type G – High-Range Water-Reducing and Retarding Admixtures

Type F and G admixtures are known as high-range water-reducing (HRWR) admixtures or superplasticizers. They are capable of producing large water reductions or great flowability without causing undue set retardation or entrainment of air in cementitious mixtures. HRWRs must reduce the water content of a concrete mix by at least 12% and may reduce it by more than 30% from a control mix.

The composition of HRWRs has seen a great change during the last several years. In the past, the most common HRWRs consisted of products commonly referred to as melamine (MSFC) or naphthalene (NSFC) based chemicals. A problem with MSFC- and NSFC-based products is they have limited slump-life capabilities. In the past several years, melamine- and naphthalene-based high-range water reducers have been replaced by a new class of chemicals called “polycarboxylates” or PCs. PCs consist of comb-shaped molecules that provide water reduction without affecting setting time. They are highly engineered and provide a wide range of slump-life capabilities. They are also very efficient in producing self-consolidating concrete (SCC).

High-range water reducers are very efficient at interacting with fine-grained materials such as cement, fly ash, slag and silica fume. The ability to disperse these finely ground particles creates strength that is higher than one would expect from just the decreased water-cement ratio.

Plasticizers – ASTM C1017

ASTM C1017 is a subset of ASTM C494, Types F & G. It is a special class that requires the admixture to produce a slump in excess of 7.5 in. These products are often referred to as superplasticizers. They may be beneficial to precasters in improving workability, increasing strength and decreasing permeability. Most products meeting ASTM C494 Type F or G also meet ASTM C1017 Type 1 or Type 2.

Conclusion

Water-reducing and set-controlling admixtures have proven themselves to be useful tools in the precast industry. They can significantly reduce the water-cement ratio (w/c) while decreasing the use of cement, altering the set time to help in production, improving workability and decreasing permeability. Their use does not, however, preclude the use of good concrete practices such as curing. The type of admixture and dosage recommended varies by manufacturer and must be considered with other materials used. Discuss the specifics of your operations with your admixture supplier and use trial batches to ensure that you are getting the properties you want in the most economical manner. ■

Claude Goguen, P.E., LEED AP, is NPCA's director of Technical Services and Sustainability.

Sustainability is not just about being green – it's about being green **and** resilient.

PRECAST CONCRETE: Resiliency in the Face of Fury

BY CLAUDE GOGUEN, P.E., LEED AP

Mother Nature continues to deal out disasters at a seemingly higher pace in recent years, including Hurricane Sandy's visit to the eastern seashore late last year. Many communities in New Jersey, New York, Connecticut, Virginia and Delaware are faced with the same daunting task shared by cities like New Orleans, Tuscaloosa and Joplin: rebuilding. When rebuilding post-disaster, one question should be: "How can we be better prepared when this happens again? How can we enhance the resiliency of our community?"

The cover photo of the Nov. 26 issue of Newsweek magazine shows a house ravaged by Hurricane Sandy with the caption "12 Ways to Avoid the Next Catastrophe." The article focuses primarily on our aging infrastructure and its susceptibility to disasters. Not mentioned are the commercial, institutional, industrial and residential buildings that are also at risk. That is why builders are taking a serious look at resilient construction materials such as precast concrete for infrastructure and buildings.

Bouncing back from disasters

What is resiliency? In the study of physics, it is the physical property of a material to return to its original shape or position after a deformation. Resiliency can describe how a friend successfully battles a debilitating illness, or how rapidly a community recovers from a natural disaster. It's the ability

to bounce back – or, more specific to precast concrete, a structure's ability to withstand a storm's stress forces without failure.

What does resiliency have to do with sustainability? Everything. Sustainability, in the broadest sense, is the utilization of resources in a manner that meets the needs of present generations and protects and preserves the environment for future generations. Buildings, roads and infrastructure that are designed and built to withstand natural and man-made disasters not only protect people and equipment, but also reduce the need for costly repair and rebuilding. Less rebuilding-related site disruption is a big part of being a responsible environmental steward.

Precast concrete builds resilient communities

Each year in the United States, natural disasters cause more than \$35 billion in direct property loss, not to mention the loss of life. Disaster preparedness and community resiliency are on the forefront for U.S. Homeland Security and FEMA, and we will continue to hear more about this subject.

The goal is to build resilient communities. A resilient community anticipates problems, opportunities and the potential for unexpected events. It reduces vulnerabilities, and it responds effectively, fairly and legitimately. And a resilient community recovers rapidly and safely. In addition to critical disaster

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management services of local governments, a resilient community recognizes that private businesses, individual citizens and volunteer organizations are critical recovery resources.

Based on experience from past natural disasters, officials agree that the key to community recovery is getting businesses up and running. This means restoring essential services that supply electricity, water and communications as fast as possible. Precast concrete infrastructure, foundations, buildings and enclosures are perfectly suited to enhance a community's ability to get back on its feet.

Concrete Joint Sustainability Initiative: helping in disaster recovery

The National Precast Concrete Association (NPCA) is a member of the Concrete Joint Sustainability Initiative (CJSI, www.sustainableconcrete.org), an industry coalition. CJSI is involved in outreach efforts to obtain resources from local agencies, Homeland Security and the United Nations in efforts to build resilient communities throughout the world.

The precast concrete industry provides the means to build strong structures that meet the test of time, and offers resilient building designs to withstand natural disasters and help protect citizens and services.

CJSI has invited officials from the Community and Regional Resilience Institute (CARRI) and Insurance Institute for Business & Home Safety (IBHS) to help them teach communities how to adopt a more resilient posture. CARRI (www.resilientus.org) was created through a request by the Department of Homeland Security to understand and evaluate how resiliency works within communities. IBHS (www.disastersafety.org) created a suite of FORTIFIED programs dedicated to improving the quality of residential and light commercial buildings. FORTIFIED programs feature practical, meaningful solutions for new and existing structures throughout the United States using applied building science solutions to reduce property risks.

Support for business tax credits for resilient construction

Back in December, the White House sent Congress its requested amount for federal funding to help affected areas recover from the destruction left by Hurricane Sandy.

While the request totaled \$60.4 billion, of even greater importance to precast manufacturers is the White House request that federal assistance also be used "to prevent losses of this magnitude from future disasters."

Last year, legislation was in the U.S. House of Representatives that would allow tax breaks for resilient construction in federally declared disaster sites. The bill, H.R. 5839, would enable contractors to take tax credits for rebuilding stronger, more resilient structures after a disaster.

A move in Congress to attach H.R. 5839 as an amendment to Hurricane Sandy relief failed, but the bill could emerge again in the 113th Congress. NPCA supports tax credits for resilient construction, because it is a common sense approach that would encourage stronger, disaster-resistant structures in regions prone to extreme weather.

Precast concrete: safer and stronger

Sustainability is not just about being green – it's about being green and resilient. The precast concrete industry provides the means to build strong structures that meet the test of time, and offers resilient building designs to withstand natural disasters and help protect citizens and services. With this knowledge, you can encourage specifiers to consider resiliency when designing buildings and infrastructure and, in particular, to consider the outstanding resiliency of strong precast concrete when selecting materials. ■

For more information on the resiliency of precast concrete, contact Claude Goguen, P.E., LEED AP, NPCA's director of Technical Services, at cgoguen@precast.org or call (317) 571-9500.

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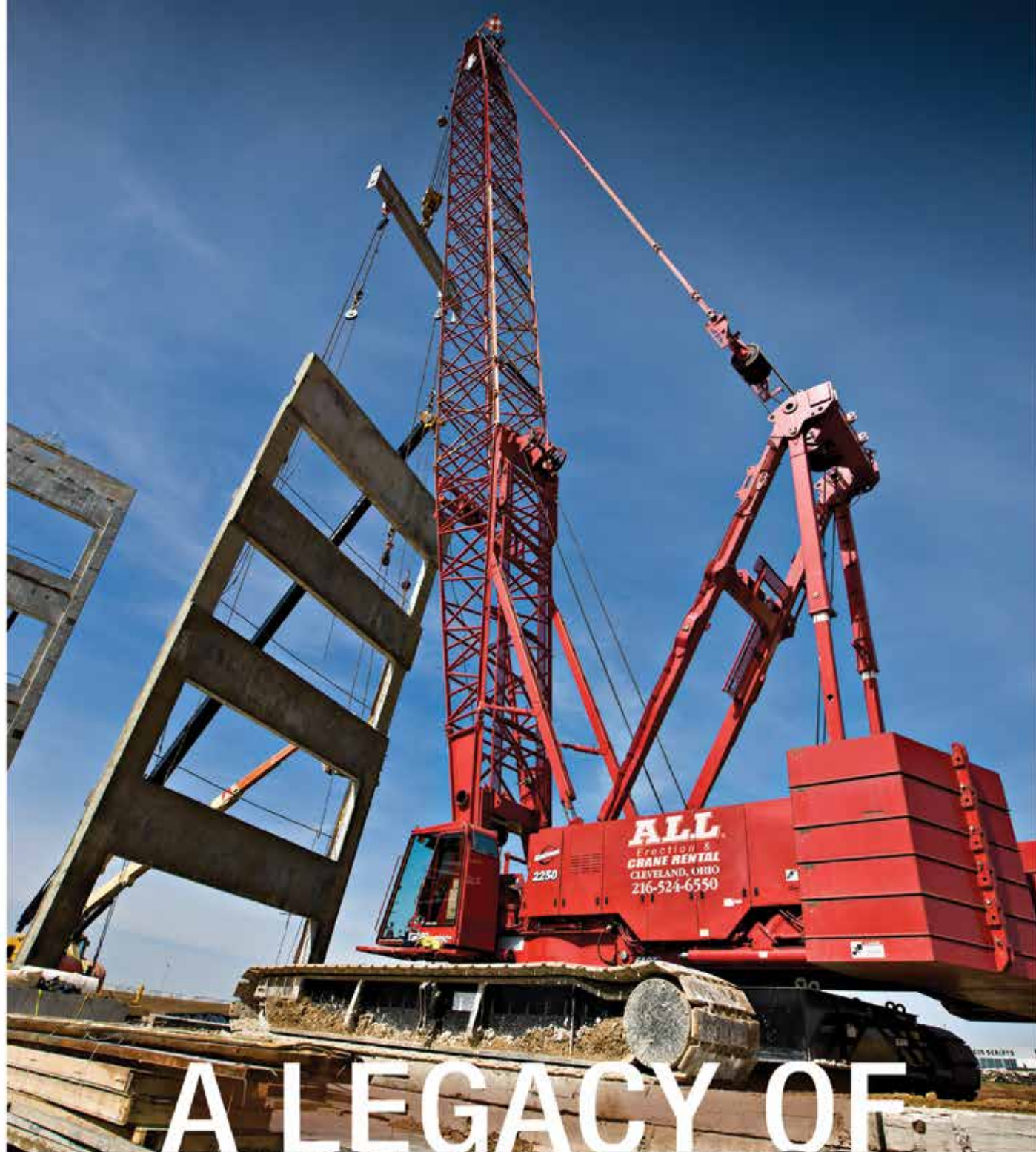
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What Does ANSI Accreditation Mean for NPCA?



BY PHILLIP CUTLER, P.E.

The American National Standards Institute (ANSI) has accredited the NPCA Plant Certification Program as of May 2012. ANSI accreditation means NPCA's program is consistently administered in accordance with international standards. The importance of national and international

compliance standards provides the global economy with a consistent and verifiable measure of quality in the marketplace.

ANSI accreditation is important to NPCA, because it shows that NPCA has detailed policies and procedures in place to administer its plant certification program, and that those policies and procedures live up to ANSI's rigorous standards.

So why is it important to you that your NPCA certified plant is ANSI accredited? It is for the same reason that ANSI is important.

ANSI is important because it provides accreditation in accordance with ISO/IEC Guide 65 for product certification programs to ensure that the marketplace can gain confidence for its activities. ISO/IEC Guide 65 provides the requirements that must be met in order to be accredited by ANSI, just as the NPCA Quality Control Manual for Precast and Prestressed Concrete Plants spells out the requirements that producers must meet in order to be NPCA certified.

ANSI accreditation is important because it provides a level of assurance that the NPCA Plant Certification Program operates in a consistent and highly reliable manner to Guide 65 "General Requirements for Bodies Operating Product Certification Systems."

The ANSI logo is the symbol of Quality for Certification Bodies that is recognized nationally and internationally in the marketplace. The ANSI accreditation logo is very much like the NPCA Certified Plant stencil that mark products from certified plants. It is a symbol of quality that owners, engineers and specifiers recognize and depend on.

How does ANSI monitor compliance?

Much like the annual audits NPCA certified plants receive, ANSI visits the NPCA offices and conducts a two-day surveillance audit each year to validate compliance with applicable standards. The main difference is that NPCA does not receive a score.

NPCA requires certified plants to respond in writing to all deficiencies within 45 days of the plant audit. In a similar fashion, NPCA is required to respond in writing to each and every nonconformance the ANSI auditor may discover. During the audit, NPCA receives either an NCR (nonconformity) or an OFI (Opportunity for Improvement) report as measured against the standard guidance document, Guide 65. The response from NPCA must completely address the deficiency and provide a corrective action plan to prevent recurrence.

ANSI's requirements for accreditation under Guide 65 create a system of compliance, policies and procedures, and serve as a benchmark for operating repeatability for NPCA as the authoritative body granting certification to member plants meeting the requirements of the program. ANSI accreditation is one of NPCA's many commitments to certified plants. ■

Phillip Cutler, P.E., is director of Technical Services and the NPCA Plant Certification Program. The NPCA Plant Certification Program is accredited by the American National Standards Institute (ANSI).

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US Foundry Winners:

Saverio Potente (John E Potente & Sons)
Travis Brousseau (Camp Precast)
Ryan Garrick (MST Concrete Products)
Michael Dewey (Palette Stone Corporation)
Ken Karenbauer (Key Precast & Supply)
Allen Lee (Lee's Precast)

USF Fabrication Winners:

Clay Prewitt (H2 Precast)
Rick Kirchner (Advance Concrete Products)
Kevin Dingeman (Cretex Concrete Products)
CJ Scott (Scituate Ray Precast)
Jeff Lynch (Hereford Concrete Products)



Saving the Eastern Hellbender Salamander

A simple, elegant precast solution could help bolster an endangered species.

BY ROBERT WHITMORE

You may not spend a lot of time thinking about the Eastern Hellbender Salamander, but Greg Lipps sure does. Lipps, an independent consultant to the Ohio Department of Natural Resources, has spent years studying this completely aquatic salamander – an amphibian that has been categorized as an endangered species by the Ohio Division of Wildlife. The Eastern Hellbender is found in swift-flowing rivers and streams in the eastern United States. In Ohio and Missouri, where most of the research has been done, the population has declined 82% since the 1980s, Lipps said.

Lipps is one of a small cadre of biologists who have been working to find ways to rebuild the Eastern Hellbender Salamander population, and he may have found an answer – in a custom-designed, precast concrete habitat that resulted from a collaboration among Lipps, Bluffton Precast Concrete Co. and Norwalk Precast Molds Inc.

The natural habitat for an Eastern Hellbender is a large rock embedded into the substrate of a river that has a small opening where the salamander can weave its way into a cavity and lay eggs. The small opening allows the male salamander to defend its nest from predators such as fish. As development occurs in the water, those large rocks are often silted over, destroying the habitat. Lipps said there is no research to provide a direct link between the availability of the boulders and the decline of the Hellbender, but he would like to find out.

One way to test the theory would be to supplement the habitat, and that's where the precast concrete solution comes in. A colleague of Lipps' at the Missouri Department of Conservation, Jeff Briggler, began creating his own artificial Hellbender habitat using chicken wire and concrete. "Jeff built some of them and gave them to the St. Louis Zoo," Lipps said. Briggler's artificial habitat soon harbored some happy



Hellbenders. "Once you give them the right conditions, they started breeding in captivity, and now they've been breeding for two years in a row," Lipps said. Briggler has also documented their use in the wild.

Lipps wanted to build on Briggler's work by formalizing the design and creating an artificial habitat that could be placed directly into the river or stream. He searched precast.org for a precast concrete manufacturer located nearby and landed on Bluffton Precast, an NPCA-certified plant in Bluffton, Ohio.

"I called them up and told them I had a rather odd request," Lipps said. "They said it looked like something they might want to tackle."

Lipps started working with David Akin, president of Bluffton Precast, showing him pictures of the chicken wire structure and adding his own specifications to the structure. Akin then contacted Eric Hudberg, vice president at Norwalk Precast Molds, to add Norwalk's expertise to the team.

"We were not sure if they were serious or not," said Hudberg. "Dave was asking, 'Hey, do you think we can build this thing?' We looked at it and figured, well why not?"

"I talked with some of our engineers here," Hudberg continued. They looked at the photos of Briggler's homemade

hut along with the additional specs that Lipps wanted, like a removable lid, no light leaks, and a knockout in the base where the river bottom would be exposed. An additional modification was a port for the insertion of a water quality monitoring device and a small camera.

"After we got into it, it wasn't terribly challenging once we broke it down and got into the components," Hudberg said. "We ended up with a three-piece mold set."

Lipps worked with his new collaborators at Bluffton and Norwalk and made several modifications to the design. The entry is a tapered tunnel about 20 inches long that leads to a cavity where the eggs can be laid. The hut weighs about 150 pounds and should sit down firmly into the substrate of a river or stream.

"It needs to be big," Lipps said. "If you think about what a stream potentially goes through every year with ice sheets and floods – it can't be something that will be pushed around. It needs to be able to stay in place."

What seems big to a biologist may look tiny to a precaster. Casting of the first salamander hut wasn't technically difficult, said Akin. One of the challenges was actually its small size. "When you're used to making things that are up to 20 tons apiece, this is a little different," he said. "We used our burial vault wire and hand-formed a cage for the top section and another for the base piece. We used our 5,000 PSI burial vault mud with fiber, and then actually poured both pieces on top of a panel form."

The first finished Hellbender Salamander Habitat Hut rolled out of Bluffton in late January, and Lipps took it to a meeting at the Toledo Zoo the next day. The group made a few modifications that Norwalk and Bluffton will incorporate into the next version of the new product. Word of the precast salamander hut has already circulated in the salamander community, and Lipps is looking forward to taking one of the huts to a conference in Chattanooga, Tenn., later this year. Financial support for the development and production of the Hellbender huts came from the Ohio Division of Wildlife, the Columbus Zoo and the Toledo Zoo.

If the Hellbender hut is successful, it could be used for research, for rebuilding of the population where it has become endangered across the country, and also for mitigation projects. When a stream is disturbed, the developer is often required to mitigate the damage by restoring the stream as closely as possible to its natural state. The hut could prove to be a sensible, less costly way to provide the needed mitigation, Lipps thinks.

Why is important to save a species? The Hellbender salamander grows up to 2 ft long and can weigh in at more than 2.5 lbs. They survive up to 50 years in the wild and are among the most ancient amphibians on earth, according to Lipps. Like the canary in a coalmine, they provide biologists with an indicator of the health of a stream. Where they are present, the stream is likely to be fairly clean and well-oxygenated. And that's good news for smallmouth bass fishing enthusiasts, for example, because the bass requires a similar habitat.

"If you have healthy streams for Hellbenders, you'll have good smallmouth bass fishing," Lipps said. The Hellbender is different from a mayfly, he added. If a stream is degraded, the mayfly



THE EASTERN HELLBENDER
SALAMANDER

Photo courtesy of Greg Lipps

"It's nice to be involved in something unique that could potentially have some impact... I think we're going to have to get some Hellbender salamander T-shirts made."

–Eric Hudberg, vice president at Norwalk Precast Molds

population may disappear for awhile, but the mayfly will always come back. "With the Hellbender, once they're gone ... they're gone."

In Japan, precast concrete has been used for years to provide habitat for a larger salamander species that is known as a Hanzaki, Lipps said. "They have Hanzaki blocks placed onto retaining walls in Japan to help them bolster their Hanzaki population," he said. The Hanzaki blocks may have formed the genesis of Lipps' idea to contact a precaster to provide him with a suitable salamander structure. He wasn't sure if he would find anybody to take on his unusual customized request. But he didn't know about the can-do culture of precasters. "I thought I'd be calling precasters for weeks, so I feel pretty lucky that Bluffton was willing to take on the project," Lipps said.

The Hellbender salamander hut project has provided a little variety for Bluffton's production team, Akin said. "It's been a blast. We've been back and forth with different drawings. I've gone from never having heard of the darn thing to being pretty intimate with it."

The folks at Norwalk concur. "It's nice to be involved in something unique that could potentially have some impact," said Hudberg. "It's something different from the usual septic tank or burial vault type of project. We did a lot of custom jobs in 2012, so this was a perfect way to end the year." In the process, the Norwalk team has become fans of the salamander, Hudberg added. "I think we're going to have to get some Hellbender salamander T-shirts made." ■

Robert Whitmore is NPCA's vice president of Communication.



THE PRECAST SHOW 2013 DREW MORE THAN 3,300 ATTENDEES TO THE TRADE SHOW FLOOR AT THE INDIANA CONVENTION CENTER IN DOWNTOWN INDIANAPOLIS.

NPCA file photo

Precast Show Attendance Mirrors Slow but Steady Construction Recovery

For the second straight year, attendance at The Precast Show reflected the positive impact of the slow but steady economic recovery and on the confidence of the industry.

The Precast Show 2013, held at the Indiana Convention Center in downtown Indianapolis, included a 100,000-sq-ft show floor and attendance was strong with more than 3,300 attendees.

Beyond the trade show, committee meetings, special events and multiple days of education highlighted the annual event. In total, attendance for classes ranging from management and professional development, to industry-specific technical, quality and safety courses, was nearly 800.

"There's no doubt the confidence level in our industry continues to grow," said Ty Gable, president of the National Precast Concrete Association (NPCA), "but our members are mindful of both the slow nature of the recovery and the potential setbacks that exist. I heard time and time again from our producer members and exhibitors that they are ready to expand

if the right moves are made to remove the uncertainty in taxes and regulations."

The Precast Show is sponsored by NPCA, along with the American Concrete Pipe Association, National Concrete Masonry Association, Interlocking Concrete Pavement Institute and the Cast Stone Institute.

The Precast Show 2014 will take place at the George R. Brown Convention Center in Houston, Feb. 13-15. For ongoing updates about The Precast Show 2014, visit ThePrecastShow.org.

MASTER PRECASTER CLASS OF 2013

NPCA honored its 2013 class of Master Precasters during the Salute to Excellence, Saturday, Jan. 12, at the JW Marriott Indianapolis. To receive certification as a Master Precaster, students must successfully complete the rigorous Precast University curriculum. In doing so, the 12 candidates who earned their symbolic "golden hardhats" have shown a dedication to

THE MASTER PRECASTER CLASS OF 2013



NPCA file photo

their employers and the industry. The 2013 graduates are:

- Loretta Bodi – Gainey’s Concrete Products, Holden, La.
- Frank Bowen – Piedmont Precast, Atlanta
- Brock Gill – Wilbert Precast, Spokane, Wash.
- Gerald Lajoie – Jefferson Concrete, Watertown, N.Y.
- Tim Kerlin – Bethlehem Precast, Bethlehem, Pa.
- James Motes – Jefferson Concrete, Watertown, N.Y.
- Chris Neuman – Wieser Concrete Products, Maiden Rock, Wis.
- Jude Mandes – Gillespie Precast, Chestertown, Md.
- Bob Palmer, P.E. – Foley Products Co., Newnan, Ga.
- Chad Risley – Zeiser Wilbert Vault, Elmira, N.Y.
- Jeremy Sherman – Zeiser Wilbert Vault, Elmira, N.Y.
- John Vitale – Northeast Concrete Products, Hewitt, N.J.

CREATIVE USE OF PRECAST AWARDS

The Creative Use of Precast competition recognizes innovative uses of precast concrete in construction projects during the previous year. Awards are made in Above Ground and Underground categories.

Above Ground

- 1st Place:** Universal Precast, Redding, Calif. – *Stagecoach Climber*
- 2nd Place:** StructureCast, Bakersfield, Calif. – *Madina Center of North Stockton*
- 3rd Place:** StructureCast, Bakersfield, Calif. – *Tejon Ranch Monument Sign*
- Honorable Mention:** Northeast Precast LLC, Millville, N.J. – *Quarry Retaining Wall*
- Honorable Mention:** Pacific Precast Inc., Vancouver, Wash. – *Martin Luther King Viaduct*

Underground

- 1st Place:** Oldcastle Precast, Lebanon, Ohio – *Bellamy Bat Cave*
- 2nd Place:** Cape Fear Precast, Jacksonville, N.C. – *Jack Smith Creek Stormwater Project*
- 3rd Place:** By-Crete, Lebanon, Pa. – *Pegula Ice Arena Detention System*
- Honorable Mention:** Terre Hill Concrete Products Inc., Terre Hill, Pa. – *World Trade Center Transportation Hub*

SUSTAINABILITY AWARDS

Sponsored by Concrete Sealants Inc.



New this year, the NPCA Sustainability Awards competition recognizes sustainable practices in plants and sustainable projects. Awards are made in two divisions: Producer Division for NPCA precast manufacturers and Associate Division for NPCA supplier companies.

Producer Division

- Sustainable Plant:** StructureCast, Bakersfield, Calif. – *Material Recycling Center*
- Sustainable Project:** StructureCast, Bakersfield, Calif. – *Pomona College South Campus Parking Structure*
- Honorable Mention:** Arto Brick California Pavers, Gardena, Calif. – *Port of Los Angeles World Cruise Center Photovoltaic Array*
- Honorable Mention:** Lindsay Concrete Products Co., Canal Fulton, Ohio – *Precast Concrete Solar Skid Shelters*
- Honorable Mention:** Mountain West Precast, Ogden, Utah – *I-15 Concrete Pavement Rehabilitation*
- Honorable Mention:** Smith-Midland Corp., Midland, Va. – *Single Stream Recycling Program*
- Honorable Mention:** Smith-Midland Corp., Midland, Va. – *Wall Panels/U.S. Army Legal Service Agency Administration Building*
- Honorable Mention:** Utility Concrete Products LLC, Morris, Ill. – *Baha’i House of Worship Rainwater Harvesting Project*

Associate Division

- Sustainable Plant:** M.A. Industries, Peachtree City, Ga. – *Plant Recycling Program*
- Sustainable Project:** Nycon Corp., Fairless Hills, Pa. – *Nycon G-Fiber Reinforcing for Heidrich Hotel and Conference Center*
- Honorable Mention:** BASF Construction Chemicals, Cleveland – *Concrete Mix Optimization Program*
- Honorable Mention:** Hill and Griffith Co., Indianapolis – *Rainwater Harvesting*
- Honorable Mention:** Hill and Griffith Co., Indianapolis – *GRIFCOTE LV-50 Form Release*

THE PINNACLE AWARD

Sponsored by Spillman Co.



The Pinnacle Award recognizes inventions, innovations and bright ideas that increase efficiency, improve profits or promote employee morale. Entries are presented to NPCA members during The Precast Show, with members serving as the judges. The winning entry receives the Pinnacle Award traveling trophy and a catered luncheon at the plant for all employees.



NPCA file photo

THE 2013 PINNACLE AWARD TROPHY WENT TO HY-GRADE PRECAST CONCRETE, ST. CATHERINES, ONTARIO.

2013 Pinnacle Award

Hy-Grade Precast Concrete: St. Catharines, Ontario – *Plant and Equipment Visual Maintenance Board*

PLANT CERTIFICATION AWARDS

Quality Award of Excellence for Plant Certification

(Based on the top three plant certification inspection scores from 2012; because of scoring ties, five awards were presented)

- Bethlehem Precast, Bethlehem, Pa.
- The Fort Miller Company, Greenwich, N.Y.
- J.E. Hill Precast, Leesburg, Fla.
- Leesburg Concrete Company, Leesburg, Fla.
- Stay-Right Precast Concrete, Franklinton, N.C.

Quality Award of Merit

(Based on Top 25 plant certification inspection scores from 2012; because of scoring ties, 28 awards were presented)

- Bethlehem Precast In., Bethlehem, Pa.
- Binghamton Precast and Supply Corp., Binghamton, N.Y.
- Blalock Ready Mix, Sevierville, Tenn.
- Champion Materials Inc., Carthage, N.Y.
- Colorado Precast Concrete Inc., Loveland, Colo.
- County Materials Corp., Springfield, Ill.
- The Fort Miller Co. Inc., Greenwich, N.Y.
- Gillespie Precast LLC, Chestertown, Md. (Plant 1)
- Gillespie Precast LLC, Chestertown, Md. (Plant 2)
- Hanson Pipe & Precast, Jackson, Miss.
- Hanson Pipe & Precast, Portland, Ore.
- J.E. Hill Precast, Leesburg, Fla.
- Jensen Precast, Tucson, Ariz.
- Leesburg Concrete Co. Inc., Leesburg, Fla.
- MSE Precast, Qualicum Beach, B.C.
- Oldcastle Precast Inc.-San Diego, San Diego
- Oldcastle Precast Inc., Middle Island, N.Y.

- Pro-Cast Products Inc., Highland, Calif.
- S & M Precast Inc., Henryville, Ind.
- Shea Concrete Products Inc., Amesbury, Mass.
- Sherman-Dixie Concrete Industries Inc., Hermitage, Tenn.
- Southern Precast Inc., Alachua, Fla.
- Speed Fab-Crete, Fort Worth, Texas
- Stay-Right Precast Concrete Inc., Franklinton, N.C.
- Terre Hill Concrete Products Inc., Lebanon, Pa.
- Trenwa Inc., Florence, Ind.
- Trenwa Inc., Lakeland, Fla.
- Wieser Concrete Products, Maiden Rock, Wis.

20-Year Plant Certification Anniversaries

- Binghamton Precast & Supply Corp., Binghamton, N.Y.
- Michie Corp., Henniker, N.H.
- Terre Hill Concrete Products Inc., Lebanon, Pa.

15-Year Plant Certification Anniversaries

- E.C. Babbert Inc., Lancaster Plant, Lancaster, Ohio
- Oldcastle Precast Inc., Ogden, Utah
- Superior Concrete Products, Cleburne, Texas
- Vaughn Concrete Products Inc., Henderson, Colo.

10-Year Plant Certification Anniversaries

- A & R Concrete Products Specialties Inc., New Windsor, N.Y.
- A.C. Miller Concrete Products Inc., Blairsville, Pa.
- Camp Precast Concrete Products Inc., Milton, Vt.
- Durastone Corp., Lincoln, R.I.
- Garden State Precast Inc., Wall Township, N.J.
- Jensen Precast, Sparks, Nev.
- Mack Industries of Pennsylvania Inc., Vienna, Ohio
- MST Concrete Products Inc., Central, S.C.
- Oldcastle Precast Inc., Lexington, Ky.
- Oldcastle Precast Inc., Lebanon, Tenn.
- Roman Stone Construction Co., Bay Shore, N.Y.
- Sherman-Dixie Concrete Industries Inc., Elizabethtown, Ky.
- Sherman-Dixie Concrete Industries Inc., Hermitage, Tenn.
- United Concrete Products Inc., Yalesville, Conn.
- Wilbert Precast Inc., Spokane, Wash.



NPCA file photo

EXHIBITORS SHOW THEIR WARES AT THE PRECAST SHOW 2013.



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NPCA
Precast... The Concrete Solution

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.

U.S. Concrete sells Arizona precast operations

U.S. Concrete Inc. has announced the sale of Phoenix-based Smith Precast Inc. to Jensen Precast. U.S. Concrete now has one remaining precast plant, located in Pennsylvania, and will continue to assess strategic alternatives for that operation.

For more information on Jensen Precast, visit jensenprecast.com.

Dayton Superior introduces new curing product

Dayton Superior, a provider of chemicals and accessories for the concrete industry based in Dayton, Ohio, has introduced the latest addition to its chemical product line: Clear Cure VOC J7 WB. This VOC-compliant, water-based, clear-resin, dissipating cure is designed for use on freshly finished concrete as a membrane-forming curing compound.

Clear Cure VOC J7WB may be utilized in horizontal and vertical applications. Dissipation normally begins within 10 days. It is formulated for easy removal and does not interfere with adhesion of subsequent surface treatments once it has been removed, said the company.

Clear Cure VOC J7WB is a true membrane-forming, concrete-curing compound that meets all requirements of ASTM C309. Unlike sodium silicate-

based products, Clear Cure VOC J7WB forms a continuous film on the concrete surface, retaining moisture and promoting proper cement hydration in freshly placed concrete. Additionally, Clear Cure VOC J7WB contains less than 100 g/L VOCs, making it compliant with industry standards throughout the United States and Canada and may contribute to LEED credits, said the company.

For more information, visit daytonsuperior.com.

Crystal-X waterproofing solutions announced by ConShield Technologies

ConShield Technologies, based in Atlanta, has announced the addition of Crystal-X, a new line of waterproofing products, to further extend the company's protective solutions for concrete. ConShield Technologies has been helping engineers and sewer departments successfully solve microbiologically induced corrosion (MIC) for the past two decades, and now with the addition of the Crystal-X product line, the added protection of waterproofing can be combined with the company's trademarked ConMICShield technology, said the company.

The new product line – Crystal-X AdMix, Crystal-X WP, Crystal-X SuperPatch WP, and Crystal-X WSH – is designed to form millions of fine crystalline fibers inside capillary pores and micro-cracks while concrete and mortars cure and harden. The liquid additive has been used reliably and effectively for years in Europe. Design engineers for wastewater systems can now specify one product for both waterproofing and MIC protection.

The product line offers economical and effective waterproofing protection of new and existing concrete sewer pipe and manholes as well as dams, reservoirs,

bridge decks, foundations, sewage and water treatment plants, tunnels, subway systems, and virtually any other concrete structure where water damage may occur.

For more information, visit conshield.com.

ConShield appoints business manager for Europe and South America



RAFAEL PASTOR GONZALEZ

ConShield Technologies Inc. recently appointed Rafael Pastor Gonzalez of the University of Navarra, San Sebastian, Spain, as business development manager for Europe and South America.

He will work out of the ConShield office in Madrid, Spain.

For more than five years, Gonzalez managed the technical and business activities of the Spanish Concrete Pipe Association. He was also a member of the Spanish committee for standardization of precast concrete sewer and drainage systems, participated in Spanish representation in the meetings of the pipe's standardization group of BIBM (European Concrete Precast Association), and researched for protective measures to subdue microbiologically induced corrosion (MIC), commonly known as H₂S corrosion.

Gonzalez was involved in the translation of European standards (EN 12602, EN 15304, EN 12269-2:2010) from the English version into Spanish for AENOR, the Spanish Association for Standardization and Certification. He lectured in Spain at numerous



DAYTON SUPERIOR'S CLEAR CURE VOC J7 WB

concrete manufacturing and association conferences, engineering college seminars, and international water and construction conventions. He is fluent in Spanish, English, German and Portuguese.

For more information about ConShield in Europe and South America, contact Gonzalez at Rafael.Pastor@conshield.com or call (34) 672720384.

Trenwa announces promotions



GEORGE SCHURR

Trenwa Inc., a precast concrete manufacturer with offices in Fort Thomas, Ky., and plants in Colorado, Florida and Indiana, has announced the promotion of George Schurr to president and chief operating officer. He was previously executive vice president of the company. Schurr has a bachelor's degree in electrical engineering from Purdue University

and joined Trenwa 12 years ago after serving in the U.S. Navy and working in engineering and sales capacities for several other companies.

Keith Riggs, who previously served as president of Trenwa, will assume the role of chairman and chief executive officer.

For more information about Trenwa, visit trenwa.com.

CERATECH hires corporate director

CERATECH Inc., a provider of corrosion- and heat-resistant green cements based in Alexandria, Va., has announced that Michael H. Weber joined CERATECH USA as its corporate director of Business Development & Communications. Weber,



MICHAEL WEBER

an industry veteran with 30 years in the cement, concrete and construction industry, brings a wide range of experiences to CERATECH USA as it continues expanding its

market reach with high-performance, zero carbon cements for concrete.

Weber's most recent position was executive vice president of Building Works Inc. Previous positions include vice president of Operations for Lancaster Redevelopment; director of Residential for the Portland Cement Association; vice president of Operations for Johnson Poured Walls; and director of Training and Product Promotion with Consumers Concrete Corp.

Contact him at (570) 541-2661 or Mike.Weber@ceratechinc.com.

Bremm named new head of BASF Construction Chemicals Americas



DIRK BREMM

BASF has named Dirk Bremm as senior vice president of Construction Chemicals Americas. Bremm will be located in the Construction Chemicals North American

headquarters in Beachwood, Ohio. He succeeds John Salvatore, who retired from the company at the end of 2012.

Bremm will be responsible for leading BASF's Construction Chemicals business in North and South America. During his 13-year career with BASF, Bremm has held various sales, marketing and leadership positions in Germany, South Africa and Mexico. Most recently, he was senior vice president for BASF's Construction Chemicals European retail business.

Bremm holds a degree in Business Management from Handelshochschule (HHL) Leipzig, Germany.

Salvatore, who led BASF's Construction Chemicals business in the Americas for the past 12 years, is retiring after 33 years in various leadership roles in the construction industry.

For more information about BASF, visit basf.com.

Bilco partners with Home Depot to offer its basement doors

The Bilco Co., a provider of specialty access products based in New Haven, Conn., has announced a new partnership with The Home Depot, the world's largest home improvement specialty retailer.



As of January, Bilco's trademarked line of residential products, including StakWEL and ScapeWEL window wells, Classic and Ultra Series basement doors and Classic Series steel doors featuring Bilco's new powder coat finish option will be available for purchase at The Home Depot. Products will be available through special order at retail locations nationwide via the in-store eCatalog and at homedepot.com. The Home Depot will ship purchases directly to the customer's home instead of requiring them to arrange a pick-up from the store to make the ordering process simpler than ever.

For more information, visit bilco.com.

Hyster unveils new engine, wireless tracking system

Hyster Co., a worldwide lift truck designer and manufacturer based in Greenville, N.C., has announced a new low-emissions engine and a new wireless access monitoring system.



THE HYSTER TIER IV ENGINE

With the global push for greener equipment solutions, Hyster has introduced its EPA Tier IV Final compliant engine solution on the Hyster H80FT lift

truck. The efficient 74 horsepower Tier IV Final compliant diesel engine features an exhaust gas recirculation (EGR) system and a diesel particulate filter to achieve near-zero emissions. The use of EGR technology eliminates any need for urea or diesel exhaust fluid-related equipment or costs.

Also, Hyster's lift trucks can now be equipped to track key performance data with the new Hyster Tracker wireless monitoring system. The Hyster Tracker system provides a three-tiered offering of wireless monitoring, wireless access and wireless verifications. With basic monitoring, tracking capabilities include hour meter, cost of operations,



THE HYSTER TRACKER

periodic maintenance, fault code, impact monitoring, operator training, park brake and seat belt violations, and speed alerts. Emails can also be sent automatically when certain faults or impacts occur, improving information availability when reviewing incidents. The wireless access tier adds operator access control for increased operator accountability and idle shutdown control to reduce excess fuel costs and prevent running equipment from being left unattended. The wireless verification tier adds checklist tracking to allow onboard, prompt-based verification of equipment issues, reducing expenses and potential downtime.

For more information, visit hyster.com.

Eagle Manufacturing Group launches new brand identity for its five companies

US Holdings Inc., a market leader of manufacturing and industrial products, has announced a new name for its holding group: Eagle Manufacturing Group, a collection of industry leaders with municipal construction and manufacturing products and services that have helped the company evolve over the past nearly 100 years. The announcement was made at The Precast Show 2013 in Indianapolis, the National Precast Concrete Association's annual trade show and conference.

The name change (to Eagle Manufacturing Group) brings better clarity to the company's corporate structure – the relationship of the parent company to its operating companies US Foundry and Manufacturing Corp., USF Fabrication, United Concrete Products and Eagle Metal Processing & Recycling.

Each company within the group has its own identity – each color signifying the diversity, boldness and vitality that represents each company's established position in the industry and collective future as an ever-evolving family of brands. Each company also launched a newly designed website with enhanced functionality to better meet customers' municipal construction manufacturing needs.

For more information, visit www.eaglemanufacturinggroup.com.

Philip Burkhart announces his retirement



PHILIP BURKHART

with Utility Concrete since 1985, and has been vice president since 1993. He

Philip Burkhart, NPCA chairman of the Board in 2007-2008, has announced his retirement from Utility Concrete Products and StormTrap after 30 years.

Burkhart has been affiliated

played an integral role in the company's development of its StormTrap system and was named president of StormTrap in 2002, a role he held until his recent retirement. He was active for many years with NPCA, and served on the Board of Directors from 2002 to 2009.

Burkhart's retirement was effective Dec. 31.

Vic Bockstadter retires from CONAC



VIC BOCKSTADTER

Concrete Accessories of GA Inc. (CONAC), a manufacturer of lifting systems for the precast concrete industry based in Norcross, Ga., has announced the retirement of

Vic Bockstadter.

Bockstadter started with the precast industry in 1981 in Charlotte, N.C., and worked for several companies over the years, including H. Bowen Company (BOWCO), M.A. Industries, D&L Foundry and Supply, Precast Works, Jensen Precast and CONAC.

Over his entire career, he has been a strong advocate of the NPCA for both precast producers and vendors to get involved in the association. He served on many of its committees, and is still serving a second term on the Safety, Health & Environmental Committee.

Business development has been his passion for all these years, and so he is forming a consulting company called KATVIC Readiness and Safety. KATVIC will perform in-plant training on the subjects important for today's preparedness in the workplace, and will also encourage, motivate and teach today's precast sales and marketing professionals how the old-timers developed their careers. KATVIC comes as a continuation of Bockstadter's 17 years as a law enforcement and fire chaplain. He is a 16-year member with the International Conference of Police Chaplains, and he has assisted precast

plants with incidents including workplace fatalities and employee suicide.

Bockstadter will continue to work for CONAC as a retained consultant, and he will continue his involvement in the industry including NPCA conventions, The Precast Show, Committee Week and several of the state associations. He may be reached at victorb@centurytel.net or (479) 438-1485.

Martin Engineering introduces new Cougar vibrating tables

Martin Engineering, a provider of bulk materials handling equipment based in Neponset, Ill., has introduced its new Cougar Vibrating Tables. All models are equipped with a variable-frequency drive and digital readout for exceptionally consistent vibration cycles.

All vibrating tables from Martin Engineering are equipped with Cougar Electric Vibrators, an industry-leading brand that has earned a reputation for performance and longevity through six decades of industrial service, says the company. Cougar Vibration was acquired by Martin Engineering in 2010.

Available in working heights of 30 in. and 36 in., Cougar Vibrating Tables feature pneumatic isolation for quiet, efficient operation. Standard designs can be ordered in 24-by-24 in., 36-by-36 in., and 36-by-72 in. sizes, all with an adjustable table lip that's also easily removable.

Martin Engineering offers all models on casters or with bolt-ready feet, in standard voltages from 115V to 575V.

For more information, visit www.martin-eng.com or call (309) 852-2384. Global representatives for Martin



MARTIN ENGINEERING'S NEW COUGAR VIBRATING TABLE

Engineering can be found at www.martin-eng.com/rep-finder.

Redi-Rock adds to engineering department

Redi-Rock International, a leading large-block retaining wall system licensor, has welcomed Bryan Lindfors, P.E., to its engineering team.

Lindfors is a professional structural engineer with more than 22 years of experience designing buildings and structures. He spent the first eight years of his career designing multilevel prestressed concrete parking structures throughout the Midwest, then transitioned into designing structures for



BRYAN LINDFORS

large residential and small commercial buildings for the past 14 years. He has served as the structural engineer of several steel, masonry, concrete, and timber framed buildings, as well as deep foundation systems and retaining walls for these buildings.

Lindfors obtained a bachelor's degree in civil engineering from Michigan Technological University and a master's in civil engineering from Washington State University. He is a licensed professional in the State of Michigan.

The initial focus for Lindfors at Redi-Rock will be technical support for engineers, architects, manufacturers, contractors and others looking for a Redi-Rock solution. You will also see him involved in training, R&D, technical literature updates and more.

For more information about Redi-Rock, visit redi-rock.com.

ASCC adds technical director to its staff

Bruce Suprenant, Ph.D., P.E., FACI, of Boulder, Colo., has joined the staff of the American Society of Concrete



BRUCE SUPRENANT, PH.D.

Contractors, based in St. Louis, as technical director.

Suprenant's experience in the construction industry includes structural

engineer with Sverdrup & Parcel, St. Louis;

structural manager with Lapin, Ellis and Dabler, St. Louis; analytical structural engineer with the Portland Cement Association, Chicago; vice president, engineering and technical services at Baker Concrete Construction, Monroe, Ohio; and vice president of Structural Services Inc., Dallas. He also served as editorial director and vice president of The Aberdeen Group.

For 16 years he taught structures, construction and materials at Montana State University, the University of Wyoming, the University of South Florida and the University of Colorado-Boulder. Most recently he was owner and president of Concrete Engineering Specialists, Boulder, a concrete construction consulting firm.

Suprenant often serves as an expert witness in the litigation and arbitration of concrete structures, construction and materials. He is a fellow of the American Concrete Institute (ACI) and a member of ACI 302, 117 and 301. He co-writes a monthly column for *Concrete Contractor* magazine and has written numerous other magazine and journal articles. He has published more than 100 papers and presented more than 100 lectures.

Suprenant has a bachelor's degree in construction from the University of Illinois, a master's in structures from the University of Illinois, and a doctorate in civil engineering from Montana State University.

Suprenant replaces Ward Malisch, who will continue with ASCC in a part-time position as concrete construction specialist.

For more information about ASCC, visit asconline.org. ■

Meeting	Location	Date
NPCA 48th Annual Convention	The Homestead – <i>Hot Springs, Va.</i>	Oct. 9-12, 2013
The Precast Show 2014	George R. Brown Convention Center – <i>Houston</i>	Feb. 13-15, 2014
The Precast Show 2015	Orange County Convention Center – <i>Orlando, Fla.</i>	March 5-7, 2015

For the most up-to-date information about NPCA events, visit precast.org.

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