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Does Your Reputation Precede You?

BY TY GABLE | *President, National Precast Concrete Association*

Looking for More? For regular commentary from Ty, as well as product and member information, be sure to visit www.precast.org/blog.

What's the first thing that comes to mind when you see the following list of names: Arnold Schwarzenegger, Anthony Weiner, Mark Foley, Eliot Spitzer, John Edwards? I assume most of your answers are something along the lines of "political scandal," and that's exactly my point. Each of these men worked themselves to the top ranks of the political spectrum, to posts that offered them the opportunity to do great good, and instead they'll be forever remembered for their misdeeds. If you take a look at the polls, the public opinion of our government as a whole is not exactly high right now, and these individuals are not helping that cause.

My point here is that a damaged reputation is mighty hard to repair, which is why reputation management is so critically important. One of the main missions of the National Precast Concrete Association (NPCA) is to ensure that precast concrete maintains a good reputation, and we do that through the implementation of our Plant Certification Program, the creation of educational opportunities for owners and production workers, and much more.

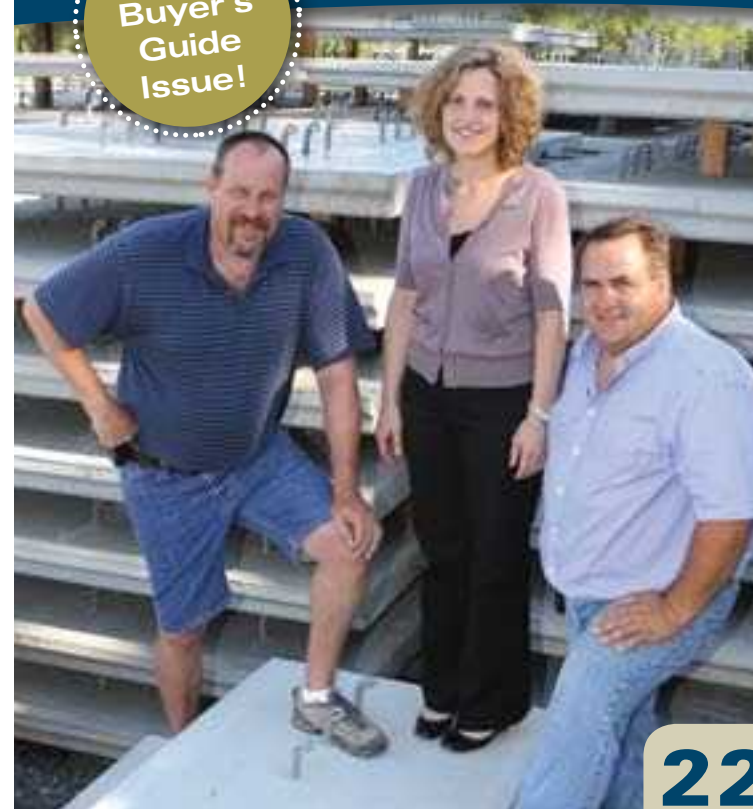
Our passion for ensuring members are producing quality products made the pill we recently had to swallow that much harder. Our industry received quite a bit of negative press coverage for the failings of one plant. If you didn't see the story, here's a summary: A federal case was filed against a plant that supplied products for a government project and did not meet specifications. As a result, its quality control director pleaded guilty to making false statements and could face five years in prison and a \$250,000 fine on each of three counts.

The consequences of such actions are far reaching. Just as one politician's misdeeds can affect the public opinion of our entire government, the lack of quality in one plant undermines everyone and denigrates the work of all other plants that make the effort every day to ensure their reputations are strong. This holds especially true when it makes the mainstream news.

The government, and all customers for that matter, have a right to expect that the products they pay for meet or exceed all their specifications. If you don't agree with something in the specs, make your case for a change. If that doesn't work, you have one of two choices: You can either adapt to the customer's requirements and make the products as requested, or you can turn the job down – there are no other options.

Understanding this is simply customer service 101. The customers are always right, and you have to give them what they pay for. When we do anything else, we undercut the trust that we have worked so hard to develop, and we damage the reputation of an entire industry. ■

Special Buyer's Guide Issue!



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COVER STORY

All Things Are Possible

By Ron Hyink

Robert Shanaman, Lorie Ruga and John Ruga of Northeast Precast LLC in Millville, N.J., got their feet on the ground with MSE wall panels (shown) and other products after the languishing economy jolted them into diversifying their product line. Just as they were getting established with their foundation wall business, they had to lay everything on the line to stay in business.

Photo by Ron Hyink

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



Why Rebar Spacing is Crucial

BY MEL MARSHALL, P.ENG.

Most manufacturers of precast concrete products use reinforcing steel in their forms simply because they have been told to do so by a specification or a design engineer, or in many cases simply because the father told him or her to do it. But is it really necessary to put steel bars in concrete? If so, why?

In the construction industry, we are all familiar with the term “concrete strength,” which actually refers to concrete’s compressive strength. For example, a concrete strength of 4,000 psi means it can withstand a load of 4,000 lbs of compressive force for every sq in. of surface area. That’s pretty strong stuff! Concrete strength is measured in a compressive test on a concrete cylinder where the sample is squeezed (compressed) between two hydraulic cylinders.

All strength is not the same

Compressive strength is one test, but what happens to the strength of concrete if we pull on the ends of the sample, rather than squeeze them together? In other words, what if we put

the concrete in tension, or stretch it, in what is referred to as a tensile test? Now we find the tensile strength is only one-tenth of its compressive strength. Concrete that has an impressive compressive strength of 4,000 psi has maybe 400 psi of tensile strength. Not so strong in tension!

Since reinforcing steel can withstand much higher tension or stretching forces than concrete, we use steel to withstand the tensile stresses that build up in the product when it is loaded. The steel is located in those parts of the product where the concrete is forced to stretch or bend under service loading. In some design situations, compression steel is also required, but this article addresses only tension steel, the reinforcement most precasters use in their products.

The structural integrity of every reinforced concrete product is dependent upon the following:

1. Grade of steel;
2. Size and spacing of the steel reinforcing; and
3. Location of the steel within the product.

Calculating the amount of steel needed

When a civil engineer designs a reinforced concrete component, the cross-sectional area of reinforcing steel required for every foot of product length must be calculated. All reinforced concrete designs are based on the required number of sq in./ft of reinforcing steel to safely carry the load. And, every foot of product must have the same amount of steel as the foot beside it to ensure the product has uniform strength throughout.

If the steel rebar placers do not maintain correct spacing in the forms, the product strength is comprised. For example, if the designer calls for #5 rebar spaced every 4 in., three #5 bars need to be placed for every 12 in. of the form. If the steel placer is a little sloppy and places the #5 bars at 5-in. spacing rather than 4-in. spacing, the strength of the product will be reduced by 20%. Yes, concrete’s structural integrity can be compromised just that easily!

Placing #5 rebar correctly at 4-in. spacing provides a steel area of 0.93 sq in., whereas placing the same bars incorrectly at 5-in. spacing will reduce the steel area provided to only 0.74 sq in. – 20% weaker! It is very possible that this difference in spacing will be missed if the QC inspector does only a quick visual inspection of the rebar spacing. Even if the rodmen space the bars at every 4.5 in. rather than at every 4 in., the strength is reduced by 10%, which is still a very significant error. QC inspectors must take the time to accurately measure rebar spacing as part of their pre-pour inspections.

When hiring new employees for the steel yard, take the time to familiarize them with rebar sizing and the importance of using the specified size for the job.

Pulling the wrong size rebar from the inventory pile can also result in a serious problem. Incorrectly placing #4 rebar at a spacing of 4 in. (rather than the specified #5 rebar spaced every 4 in.) will result in 35% less reinforcing than is needed for structural strength. When hiring new employees for the steel yard, take the time to familiarize them with rebar sizing and the importance of using the specified size for the job. At a quick glance, the difference between #4 and #5 rebar is not clearly noticeable, especially with some deformation patterns.

Because spacing is critical, ensure that steel reinforcing bars are properly secured in place, either by welding (use only Weldable Grade ASTM C706 rebar) or by installing suitable wire ties. Rebar cages must be as sturdy as possible.

The spacing of rebar is crucial, so take the time to do it right! 📏

Mel Marshall, P.Eng., is owner of Mel C. Marshall Industrial Consultants Inc. based in Delta, British Columbia. He has been actively involved in the design, manufacture and construction of concrete products and structures for more than 40 years.

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NPCA Raises the Bar on Quality

In the coming year, the focus will be on industry-wide awareness of the proper use of reinforcing steel.

BY PHILLIP CUTLER, P.E.

According to the Chinese calendar, 2012 will be the year of the dragon. For NPCA, 2012 is shaping up to be the year of concrete reinforcement.

Raising the bar, pun intended, means NPCA will be on a campaign to educate members about the proper quality control documentation and placement of reinforcement in precast concrete structures. In 2012, there will be a significant change in the NPCA Plant Certification Program in regard to reinforcement. This initiative is in response to demands from the specifier community as well as the precast industry to tighten up requirements on quality inspection of reinforcement.

Since the beginning of the NPCA Plant Certification Program in 1989, the Quality Assurance (QA) Committee has focused on quality. Improving the value of the program has been the focus of each edition of the "Quality Control Manual for Precast and Prestressed Concrete Plants," and the 2012 program will continue this trend.

What can NPCA certified plants and their prospective customers expect in 2012?

In June, during NPCA's Committee Week sessions in Indianapolis, the QA Committee voted to make the manual's section 4.3.3, "Positioning of Reinforcement," a "critical requirement section" for plant certification beginning in January 2012 (see the sidebar "Critical Requirements"). Representatives from certified plants heard details about this change and the

rationale behind it at a luncheon during NPCA's 46th Annual Convention in Coeur D'Alene, Idaho.

Why should reinforcing steel be a critical section requirement?

For plant engineering, quality, estimating and management personnel, the reasons and needs for proper selection, positioning and documentation of reinforcing steel characteristics (type, size, shape, steel area, condition and grade) in structures may be quite obvious. However, to fabricators and other plant personnel assembling and placing the reinforcing steel, these fabrication details may be viewed as just another component part on a print and the rationale behind it might not be as obvious. In order to meet design loading and performance requirements, the reinforcing steel for a given structure must be validated, which is of vital importance.

Precast concrete structures under load experience compressive forces that are easily tolerated due to concrete's inherent nature to withstand compression. However, in many load cases a structure will also experience tensile forces on the opposite side from the compression force. A simple example is a flat-top slab, where the top surface of the slab under load is in compression and, as the element has a tendency to bow under load, the bottom surface experiences "stretching" or tensile forces. Concrete structures do not tolerate tensile forces without proper reinforcing steel to support these loads. In this

case, the reinforcing steel needs to be as close to the bottom surface as possible to provide the maximum benefit. Good design practice places reinforcing steel close to the bottom surface of the slab, but always maintains the proper minimum concrete protection over the reinforcement. This distance is commonly known as adequate cover, and is usually specified in project documents or referenced in the standards that plants must conform to in manufacturing. Adequate cover is usually in the range of ¾ in. to 1 in., although more cover may be required for structures exposed to harsh weather or corrosive environments.

Also under the critical requirements of this section, plants must maintain rebar and/or reinforcing steel details for all precast structures in the plant files and ensure it is available to QC and plant personnel on the production floor. Plants will be required to maintain documentation of reinforcing cage inspections with information on the required cage design versus the actual cage used, including the following specific elements:

- Bar size and/or welded-wire reinforcement (WWR) bar diameter;
- Bar spacing and/or WWR style;
- Steel area (A_s);
- Effective depth (d), (d = the distance from the compressive face to the centroid of the tensile reinforcement member);
- Concrete cover, never less than ½ in. clear;
- Development length;
- Quantity and spacing of bars;
- Cage dimensions: length, width, height, and/or diameter, as applicable;
- Reinforcement condition:
 - Clean or light red rust, not flaking or pitted;
 - Free from oil, dirt and other contaminant;
 - If welded, meets the requirements in Section 4.2.2 (proper grade and/or carbon equivalence);
 - If welded, does not contain any damage such as gouges or cuts;
- Reinforcement hooks and bends (90° and 180°). If design requires a bend in reinforcement around a corner, it is not acceptable to tie straight reinforcing corners together.

Included at the conclusion of Section 4.3.3, a detailed inspection is required on each piece produced unless the product is machine-cast or dry-cast (see Section 4.1.5 for reinforcement in machine-cast or dry-cast products). Documentation of the inspection can be on a piece- or production-shift basis and must be recorded daily.

What is a critical requirement section?

All critical requirement sections of the NPCA QC manual require a minimum passing grade of 75% in order to achieve normal certification status. Plants failing to achieve the minimum passing score for critical requirement sections are eligible for probationary certification, and must take corrective actions and pay for a reinspection of the plant within 90 calendar days from the previous inspection. A plant failing reinspection will be required to reapply to the program.

Critical Requirements

The proposed critical section requirements for reinforcing steel in the upcoming 2012 edition of the NPCA QC Manual will include:

4.3.3 Positioning of Reinforcement – the opening paragraph of this requirement remains the same in pointing out that reinforcing steel shall be positioned as specified by the design and that concrete cover must conform to the product requirements with specific minimums for concrete cover. In addition, the opening paragraph specifies that cages shall be held rigidly within the form and be supported away from all form surfaces using a liberal number of chairs, spacers and positioning wheels. Lastly, it states that rolled welded-wire reinforcement (WWR) shall be mechanically straightened for use in straight-walled products.

Education elements

An educated work force is an effective work force. The worker on the floor places rebar on the form every day, ties it in place and uses the right spacers, but does the worker truly know why rebar is placed at a specific location? Do workers understand that placing the rebar ½ in. from the specified location could reduce the tensile capacity of the final precast product by as much as 10%? Do workers know how to read the symbols on a stick of rebar?

Sometimes manufacturing plants may depend a little too much on the QC staff. Sure, the QC staff understands the rationale behind steel detailing, but can they be reasonably expected to catch each misplaced rebar on a pre-pour inspection? Perfection is not likely. A production worker armed with the basic knowledge of steel reinforcing behavior in concrete and the rationale behind these requirements can provide additional insurance against misplaced, or worst yet, missing reinforcement.

NPCA will be launching educational opportunities for members to use to teach their own workers about the importance of reinforcement, as well as how to place it, tie it, and inspect it. Mel Marshall with Mel C. Marshall Industrial Consultants Inc. will be presenting a course on reinforcement at The Precast Show in Orlando, Fla., March 1, 2012, called the "Whys, Wheres and Hows of Reinforcement."

Reinforcement is critical to precast concrete durability. This cannot be overstated. Improper steel selection and placement can seriously impair a precast concrete structure's ability to withstand handling and service loads and can even lead to failure in the field. NPCA is committed to doing everything possible to maintain solid quality control in the proper selection and placement of reinforcing steel in all precast concrete products. Quality is something everyone in the precast industry should strive for, and 2012 promises to be a year that will raise the bar on industry-wide awareness of the critical importance of the proper use of reinforcing steel. ■

Phillip Cutler, P.E., is NPCA's director of Technical Services.

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Photo courtesy of Barabellson Precast Corp.

Lifting Apparatuses: Holding Up Standards

Whether you use commercial or homemade lifting devices, stringent rules apply.

BY EVAN GURLEY

Lifting apparatuses are said to be some of the more neglected pieces of equipment in the construction industry, many times getting attention only after they fail, are damaged, or are no longer functioning.

Two categories of lifting apparatuses are used in the precast concrete industry: commercial and homemade. Commercial lifting apparatuses include cranes, chains, hoists and forklifts that can be purchased from a manufacturer. Homemade lifting apparatuses can include anything created in-house, ranging from a standard spreader bar to something much more elaborate. Whether commercial or homemade, lifting apparatuses must adhere to industry standards and safety regulations to ensure a safe working environment.

Notes on homemade lifting apparatuses

Each precast concrete plant has its own unique lifting requirements, and shop wizards often fabricate apparatuses in-house to solve plant-specific issues, usually to avoid damage from transporting product. While homemade lifting apparatuses can be extremely beneficial and save the precaster time and money, those that are inadequately designed and maintained

can cause more trouble than benefit.

Although homemade devices may offer significant cost advantages, they must adhere to industry requirements. These codes and regulations are set in place to ensure lifting apparatuses used in the plant are able to withstand the working loads imposed on them and that they are inspected and maintained regularly.

Industry requirements

Commercial and homemade lifting apparatuses used in the precast concrete industry are required to adhere to industry-recognized and enforced standards, including OSHA, ANSI and NPCA.

OSHA Requirements. OSHA Standards for the Construction Industry are covered in the OSHA "Code of Federal Regulations" Title 29 Part 1926. OSHA regulation 29 CFR 1926.704, "Requirements for Precast Concrete," states the requirements outlined for precast concrete manufacturing and, more importantly in this case, requirements for lifting apparatuses. OSHA 1926.704 states the following:

- Lifting hardware shall be capable of supporting at least five (5) times the maximum intended load applied or transmitted to the lifting hardware.
- Lifting hardware (lifting apparatuses) shall be designed to withstand the maximum intended load by five (5) times.

ANSI Requirements. The ANSI standard establishes safety requirements pertaining to concrete construction and masonry work, including design, erection, operation and maintenance of aggregate processing plants, concrete mixing plants and conveyances. It also contains safety requirements pertinent to the specialty concrete operations of prestressing by pretensioning or post-tensioning, lift-slab construction, tilt-up construction and slipforms.

Along with OSHA, ANSI is a recognized standard that defines the regulation of practices within the construction industry. Just like OSHA 1926.704(d), ANSI A10.9 outlines the requirements and recommendations for lifting apparatuses. An important highlight of ANSI A10.9 includes Section 9.3.3, which states, "Lifting hardware shall be designed to provide sufficient strength to withstand the imposed loads with a factor of safety of at least five." Section 9.3.3 in ANSI 10.9 and OSHA 1926.704(d) requirements are equivalent and many times used interchangeably.

NPCA QC Manual. In addition to the industry standards, NPCA sets forth requirements for precast plants that are a part of the NPCA Plant Certification Program to help ensure that added safety and quality control measures are in place. The NPCA Quality Control Manual for Precast and Prestressed Plants includes the following:

- **Section 2.3.1 - Lifting Devices and Lifting Apparatuses.** Lifting devices used in precast concrete products shall be

verified for capacity and shall have an adequate factor of safety for lifting and handling products, taking into account the various forces acting on the device, including release suction and impact, and the various positions of the product during handling. The capacity of commercial lifting devices shall be marked on the devices or posted in production areas. Lifting apparatuses such as slings, lift bars, chains and hooks shall be verified for capacity and shall have an adequate factor of safety for lifting and handling products.

- **Section 2.3.1 - Comment.** All lifting devices and apparatuses should meet OSHA requirements documented in "Code of Federal Regulations" Title 29 Part 1926. Other applicable codes and standards are ANSI A10.9 and ASTM C857, C890 and C913.

The NPCA requirements add that all non-commercial lifting devices and apparatuses shall be proof-tested by a certified testing lab for the rated working load limit (WLL). A factor of safety meeting the requirements of the OSHA regulation 29 CFR 1926.704 shall be met.

Design considerations

The type of lifting apparatus used depends on the size and type of load being handled and the type of movement to be performed with the load. When designing a homemade lifting apparatus, the individual creating the apparatus – whether or not an engineer – must be able to back up the design of the device with design calculations. If the designer is not an engineer who can perform the necessary calculations, the homemade lifting apparatus will need to be proof-tested by a certified lab to ensure conformance to industry regulations and standards.

When designing a lifting apparatus, the designer must consider the WLL, the Factor of Safety and, if applicable, the angle of cables.

WLL. The maximum working load limit (WLL) of the apparatus defines the maximum allowable weight of a product that can be lifted and transported. This is the designation typically seen posted on the apparatus itself. Other terms commonly used are Rated Load; Rated Capacity; and Safe Working Load.

To determine the total weight of a precast concrete element to be handled by the apparatus, the following steps are required.

1. Measure the height, length and width of the area that will be cast with concrete. If the form is not finished, find these measurements in your blueprints.
2. Multiply the height, length and width to find the volume of the concrete. The unit of measurement for this volume is cubic feet.
3. Multiply the volume by 143.38 lbs/cu ft. The product of the volume times the unit weight of concrete will determine the total weight of the cast piece.



NPCA File photo

After confirming that the total weight (design load) of the product to be lifted and transported is under the allowable WLL, proceed with safe lifting procedures.

Factor of Safety. The factor of safety (FS) is a term used to describe the structural capacity of a system beyond the expected loads or actual loads acting upon it. You can use the following formula to calculate the FS and/or use it to determine a missing variable in your scenario.

$$\text{Factor of Safety} = \frac{\text{Material Strength}}{\text{Working Load Limit}^*}$$

* Design load being the maximum load the device should experience in service

Or

$$\text{FS} = \frac{\text{Ultimate}}{\text{WLL}}$$

For example, if you know the FS and the material strength (ultimate) of your lifting apparatus, you can determine the allowable working design load (WLL) of the lifting device.

| FS | Material Strength (Ultimate) | Working Load Limit (WLL) | Calculation using FS formula | Solution |
|----|------------------------------|--------------------------|------------------------------|------------|
| 5 | 100,000 lbs | ? | 100,000 lbs/5 | 20,000 lbs |

*20,000 lbs (10 tons) would be the maximum load allowed on this lifting apparatus

Lifting apparatuses are purposefully built much stronger than needed for normal usage to allow for emergency situations, unexpected loads, misuse or degradation. The FS is a constant value imposed by law, standard, specification, contract or custom to which a structure must conform or exceed. As outlined by industry regulations such as OSHA and ANSI, a FS of at least 5 is required for all lifting apparatuses. This FS is typically higher for lifting apparatuses, as they are used

repetitively to move precast concrete units, and as such will experience wear and tear. The higher FS allows for some wear and tear in the components until an inspection reveals that the system is in need of repair.

Angle of cables. A general rule of thumb for cables/chains that are used in the design of a lifting system is that the tension on a chain/cable increases when the angle between the product and the chain is less than 90 degrees. As the angles get smaller, the tension increases.

A homemade lifting apparatus that is designed to adhere to a FS of 5 does not imply the device is safe. Additional

engineering, quality control, manufacturing, installation and end-use factors will also influence the safety of a lifting device.

Other safety considerations – erection of general elements

In addition to design considerations, personnel operating homemade lifting apparatuses must be properly trained. This will include the following:

- Lifting equipment should be attached to the precast elements by a competent person and the immediate area cleared in preparation for lifting.
- Taglines may be required in some circumstances.
- Under no circumstances should personnel pass or stand beneath a suspended element.
- Consideration must be given to the effect of wind upon the safe handling and erection of elements, if applicable.
- Lifting apparatuses shall be identified with the WLL.
- According to OSHA 1926.251(a), rigging equipment for material handling shall be inspected prior to use on each shift and as necessary during its use to ensure that it is safe. Defective rigging equipment shall be removed from service.
- If the equipment does not have the same shape and dimensions as it had when new, it may be considered defective.
- If a beam is bent, holes are elongated or chain links are worn thin, the lifting apparatus should be removed from service and repaired.

Conclusion

Preventive maintenance, frequent inspection and adherence to industry design standards and guidelines can prevent costly downtime and potentially dangerous situations. ■

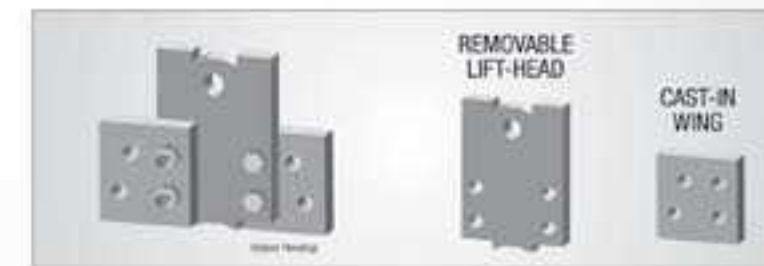
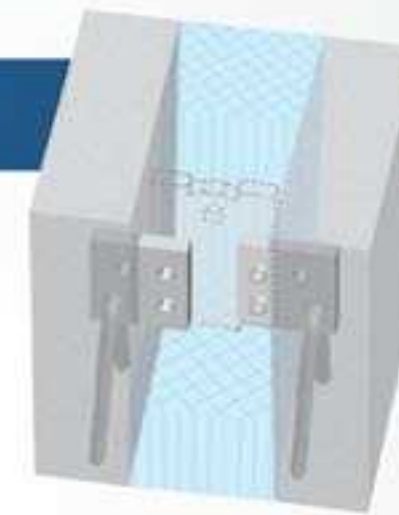
Evan Gurley is a technical services engineer with NPCA.

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Steel & Concrete: Love at First Sight

The Concrete Reinforcing Steel Institute provides the best tools for understanding steel reinforced concrete.

BY SUE McCRAVEN

Editor's Note: Work in the precast industry inevitably involves a requirement or specification established by one of many associations with acronyms such as ASTM, ACI and CSA¹. This series introduces you to these associations and their histories and a perspective on why they matter to precasters. This article takes a close look at the Concrete Reinforcing Steel Institute.

Standing on a wobbly walkway roped off with yellow caution tape, a young engineer gazes up through the dusty air as a 12-ft-high steel I-beam inches upward. Once in position, this monster beam will carry the weight of a power plant's multi-story boiler. In awe, this green engineer suddenly realizes steel's incredible potential: strong, dependable, flexible. Steel: It is love at first sight for engineers. But the construction romance gets better when steel marries concrete.

Concrete and steel were made for each other. The two groove together as one – the same coefficient of thermal expansion. One material yields its tensile strength, the other delivers its formidable compressive strength. A magnificent symbiotic structural union like no other on earth. Go ahead, build anything you want! Steel and concrete are an engineer's dream come true – and the Concrete Reinforcing Steel Institute (CRSI) keeps that dream alive.

Rodbusters and CRSI: the real deal

If you want to know anything at all about steel reinforced concrete, CRSI is the place. CRSI (www.crsi.org), founded in 1924, is a national trade association that is the authoritative resource for all information related to steel reinforced concrete construction. Its engineers can provide all manner of knowledgeable technical assistance, from how to easily decipher convoluted steel rebar specifications to understanding how the latest discoveries in steel technology will make rust a thing of the past.

CRSI's "Manual of Standard Practice" is as important to a young engineer as protein is to an athlete: You can build on it and you can grow on it. CRSI's publications are straightforward, easy-to-use, ready resources for the design office or the construction site.

Rodbusters use CRSI books. Rodbusters are the real deal, and if you don't believe this, just get to know one on any big

construction site and become educated. "Placing Reinforcing Bars" is the little brown book that has been at the foundation of every great structural engineer.

Rust: Does it matter?

In school, all the steel building components shown in books are perfectly black and shiny. In the field – the real world – steel tends to look a little orangey. But, as it turns out, that's OK. A little rust never hurt anyone. If you want to know how much rust on a reinforcing bar is still all right to use, CRSI can tell you.

CRSI can provide all the important information that anyone working with steel and concrete needs to know, and all the information from CRSI works the right way in the real world. How many organizations can say that?

While it is true that steel and concrete work together like no other building materials in the world, like rodbusters, you don't want to mess with them. There are rules for making reinforced concrete perform to its maximum in the construction world, and these rules are not to be trifled with. Concrete and steel will give you lifetimes of strength and service to depend upon, but if you don't understand their basic requirements, they can be very dangerous and unforgiving.

Reinforced concrete is very sensitive

Designing with steel and concrete is an exacting business. Yes, steel is strong. Yes, concrete is strong. Together as a composite building material, they're unbeatable. But the margin of error in reinforced concrete design is very small indeed. The amount (or area) of steel put into a given cross section of concrete must be correct. Steel rebar must be located precisely. Concrete cover over steel reinforcing bars cannot slip below a codified specification, or you could have structural failure.

The following are two of the most commonly asked questions for CRSI and the responses it provides:

QUESTION: If there is rust on the steel reinforcing bars, are they still OK to use?

Answer: There are a number of things that can get onto the surface of rebar and affect the bond strength between the rebar and concrete. Oil and grease need to be wiped off with a solvent. Dirt and mud can be washed off or cleaned using a wire brush. However, rust, mill scale and surface irregularities actually increase the bond, because they increase the roughness of the rebar. So yes, rust is OK – except if there is so much rust that the weight, dimensions or cross-sectional area of the rebar have reduced to below the minimum specified by the material standard.

QUESTION: Is it OK to bend or to re-bend reinforcing bars in the field?

Answer: The bending or re-bending of steel reinforcing bars in the field is one of the most common and one of the most controversial procedures that frequently come into question related to cast-in-place reinforced concrete construction. These situations may arise as the result of unplanned occurrences (when rebar is accidentally run over by a vehicle, for example) because of on-site corrections and adjustments, or as intentional building changes. The best advice for dealing with these situations is to always involve the architect/engineer and to follow the guidelines in the ACI 318 Building Code. ■

¹ American Society for Testing and Materials (ASTM); American Concrete Institute (ACI); Canadian Standards Association (CSA); Occupational Safety & Health Administration.

Sue McCraven, NPCA technical consultant and Precast Solutions magazine editor, is a civil and environmental engineer.

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The Check's in the Mail

Precasters grapple with an increasing number of "pay-if-paid" clauses in their contracts. Here's what you can do about it.

BY BRIDGET McCREA

Brent Dezember has seen more than his fair share of "pay-if-paid" clauses inserted into his firm's work contracts lately. Credit the shaky economy and challenging conditions in the construction industry with creating an environment where more general contractors (GCs) use these clauses to delay subcontractor payments if and when the project owner can't or won't pay the GC on time.

"We're seeing pay-if-paid clauses in more of our larger, longer-term contracts," says Dezember, president at Bakersfield, Calif.-based StructureCast. "In fact, nearly all of these contracts include these clauses."

The thing is, Dezember's state doesn't even recognize the clauses as legally enforceable, but that doesn't stop the GCs from at least trying to write them into their contracts. The hope is that if it really comes down to it, the precaster would rather wait to get paid than spend the money and time going to court.

"Even though the state of California doesn't recognize pay-if-paid clauses, which wouldn't stand up in the court of law," Dezember explains, "all of the larger contracts we've been dealing with lately do include them."

Collecting debts

An increasing number of precasters are dealing with pay-if-paid clauses, which are governed differently according to state law. In general, the clauses state the GC is not required to pay the subcontractor unless – and until – the project's owner pays

the GC. The clauses aren't problematic until it comes time for the subcontractor – particularly the one that's located in a state that recognizes pay-if-paid clauses as legal – to collect the money that it's owed.

Pay-if-paid clauses are usually worded like this one, from the Associated General Contractors of Washington:

It is agreed that as a condition precedent to any payment by Contractor to Subcontractor hereunder the Contractor must first receive payment from the Owner for the Work of Subcontractor for which payment is sought. Subcontractor specifically agrees that it is relying upon the Owner's credit (not the Contractor's) for payment, and Subcontractor specifically accepts the risk of non-payment by Owner.

A number of states have ruled that pay-if-paid clauses are unenforceable as a violation of public policy, but a few of the states continue to recognize the clauses or certain variations of them as valid, including Arizona, Colorado, Georgia, Florida, Illinois, Michigan and Maryland. On the other hand, both New York and California have invalidated such clauses. Most recently, Massachusetts enacted a new law eliminating pay-if-paid provisions and reasonable time periods for processing project payments to subcontractors.

Yet GCs continue to include the clauses in their contracts, regardless of whether the verbiage will ultimately stand up

in the court of law. "I believe they all know that they can't enforce the clauses, but most of the GCs we're working with on large projects are telling us that it's a non-negotiable point," Dezember laments. He has occasionally turned to California's lien law to collect on overdue payments from GCs and circumvent the pay-if-paid terms spelled out in the contracts.

"When things get to be 30 to 45 days past due," says Dezember, "we file a lien and tend to get paid pretty quickly." To let GCs know in advance that it's aware of its rights in California, the StructureCast team also strikes the clauses from the contract, cites the state code regarding pay-if-paid clauses and includes that information with the signed contract.

Nationally, a high number of subcontractors are making similar moves, and/or signing the contracts in the interest of keeping the business pipeline filled. The American Subcontractors Association (ASA) of the Carolinas refers to such clauses as the "dark side of the industry," and says that even those subcontractors doing work in states like New York and North Carolina – where pay-if-paid provisions are not enforceable – are "bound to run into the clauses ... which should not be taken lightly."

"The proliferation of the pay-if-paid clause is a cause for alarm," the ASA states in a recent member newsletter. "Besides being a heavy-handed and exculpatory contract clause, pay-if-paid also is an affront to the professionalism of construction contractors and subcontractors. There is no other industry in which a pay-if-paid clause would be taken seriously. The mere act of offering or accepting a pay-if-paid clause without seeking alternative language sets the construction industry apart – and not in a positive way."

Strike through

Chuck Babbert is pretty used to seeing pay-if-paid clauses in the contracts that come across his desk these days. As president of sales for E.C. Babbert in Canal Winchester, Ohio, Babbert says he automatically strikes through such clauses, and has "never entered into a contract knowing that there would be a pay-when-paid or pay-if-paid clause in it."

But that doesn't mean Babbert's team isn't grappling with the same issues that many subcontractors have to deal with when it comes to getting paid on time. In some cases, customers wait out E.C. Babbert's net 30-day payment terms and then use excuses like, "But wait, we haven't been paid by the owner yet!" to avoid paying on time.

"It's amazing how many customers apply for credit, knowing that we have 30-day payment terms, and then turn around and tell me that they're not paying until they get paid," Babbert explains. "That sounds a lot like pay-when-paid to me."

Recently, for example, Babbert says his firm signed on to complete a job for a "very good" customer that just moved all of its precast work over to E.C. Babbert from a local competitor. Written right into the customer's purchase order terms was a pay-when-paid clause that the precaster's sales rep struck through before sending the document back to the customer.

Babbert doesn't expect the customer to raise a fuss over the

Pay-If-Paid Versus Pay-When-Paid Clauses

According to the American Subcontractors Association, pay-if-paid or "contingent payment" clauses are contractual provisions that make payment contingent upon the happening of some event. In construction contracts, the typical payment clause makes the subcontractor's payment contingent upon the payment of the contractor by the owner.

According to the ASA, contingent payment clauses take on one of two forms in subcontract agreements. Some clauses link the timing of the subcontractor's payment to the time when payment is made by the owner. These are called "pay-when-paid" clauses. Other clauses specify that the owner must pay the contractor in order for the subcontractor to ever receive payment. These provisions are called "pay-if-paid" clauses.

Even though most states distinguish between the two types of clauses, a few jurisdictions find that the provisions have the same exact legal effect. For more than 30 years, most state courts have held that contractors cannot indefinitely withhold payment from subcontractors based upon a "pay-when-paid" clause. Instead, "pay-when-paid" clauses require a contractor to pay its subcontractors within a "reasonable time" of the completion of satisfactory work.

In contrast, "pay-if-paid" clauses often allow contractors to permanently withhold payment from their subcontractors where the owner has failed to pay the contractor. Because of the harshness of such a provision, most states enforce only "pay-if-paid" clauses if the contract unambiguously expresses that the parties intended for the subcontractor to be paid only if the contractor is paid.

As states have moved toward protecting the rights of subcontractors, the ASA reports that some state courts have decided not to enforce "pay-if-paid" provisions. Additionally, a handful of states have enacted legislation that declares void such contractual provisions.

The most recent list of pay-if-paid and pay-when-paid information (published in 2009 by the Foundation of the American Subcontractors Association) by state is available by searching for "contingent payment clauses in the 50 states" via an online search engine.

issue, nor does he think that a pay-when-paid arrangement will negatively impact the precaster's ability to collect. "It shouldn't create too much of a headache, because we have a relationship with this customer," says Babbert, "and it should have regular draws [from which] to pay us."

Contingency payment clauses (or customer-initiated "we pay when we get paid" rules) do create headaches for E.C. Babbert when the precaster is the first company on the job site to set up underground utilities and other infrastructure components.

Getting customers to stick to the firm's net-30-day payment terms can be challenging in such cases.

"When you're the first on the site – and if the contractor is getting paid only for structures installed at the time of submission for the draw – proof of payment can be a sticking point," Babbert explains. "Still, it's not as difficult as collecting when a pay-if-paid or pay-when-paid clause is applied." In such cases, Babbert says his firm turns to Ohio's prompt pay act, which requires GCs to pay their subcontractors within 10 days, or incur an 18% interest charge on the balance.

"We've actually had to use the prompt pay rule with customers in the past; mention it and it tends to get the

"The typical payment contingency clause states that the GC [General Contractor] doesn't have the obligation to pay the subcontractor until paid by the owner. If that expressed condition isn't included in the contract, then the GC's attempt to avoid paying won't fly."

– Andrew W. Daniels, LeClairRyan

customer's attention pretty quickly," says Babbert. "The law provides us with some leverage when customers tell us that they haven't been paid, when in reality they have received their compensation."

Lawyerly advice

Andrew W. Daniels, a partner with LeClairRyan in Boston, represents a large number of general contractors, owners, construction managers, design/builders, subcontractors and manufacturers in a variety of business and complex litigation matters.

To precasters looking for help in this area, Daniels says a good first step is to find out exactly how the clauses are viewed in the state where the work will take place (and not just your "home" state, since any lawsuits will need to be filed in the state where the business was conducted).

Some states, like West Virginia and Florida, enforce pay-if-paid clauses under the legal "freedom to contract" doctrine, says Daniels. Others, like California, don't recognize the clauses

at all, based on the fact that they go against public policy.

Other states, like North and South Carolina, and Wisconsin, approach the issue from a statutory standpoint – based on the assumption that subcontractors lack the leverage necessary to negotiate specific contract terms – and as such, have made contingency payment clauses unenforceable.

Once you've determined the respective state's rules regarding contingency payment clauses, Daniels says a simple move is to work only in states where the conditions are favorable to subcontractors. This may not be possible if your home state doesn't fall into that category, he acknowledges, but it can help precasters do a more targeted job of picking projects in neighboring states.

"Know the laws of the states that you are working in, and use that information when you're bidding on projects," says Daniels. Also understand that there are no "guarantees" when it comes to the application of the law, and that one state's interpretation of pay-if-paid may differ from the next. "Just because there is a pay-if-paid provision in the contract doesn't mean it is enforceable."

Subcontractors should also include suspension-of-work clauses in their contracts, according to Daniels, who sees this as a particularly smart move for any precaster whose state enforces pay-if-paid clauses. "If the contract states that the

payment terms are net 30, and if you don't get paid because of the pay-when-paid clause," Daniels explains, "you want to make sure that you have the right to stop working."

Finally, Daniels says precasters should demand an "open book" environment when it comes to the owner's ability to cover the project costs, especially if there's a chance that a pay-if-paid clause will be enforced. "If you take the risk of entering into an agreement that includes this clause," says Daniels, "then you want to make sure that the money is out there, and that the owner can pay."

But what about the GCs who don't use the pay-if-paid clause, and instead simply avoid paying their bills until they get a check from the owner? Daniels says most courts will state that any pay-if-paid clause has to be unambiguous (i.e., clearly stated in the contract).

"The typical payment contingency clause states that the GC doesn't have the obligation to pay the subcontractor until paid by the owner," says Daniels. "If that expressed condition isn't included in the contract, then the GC's attempt to avoid paying won't fly." ■

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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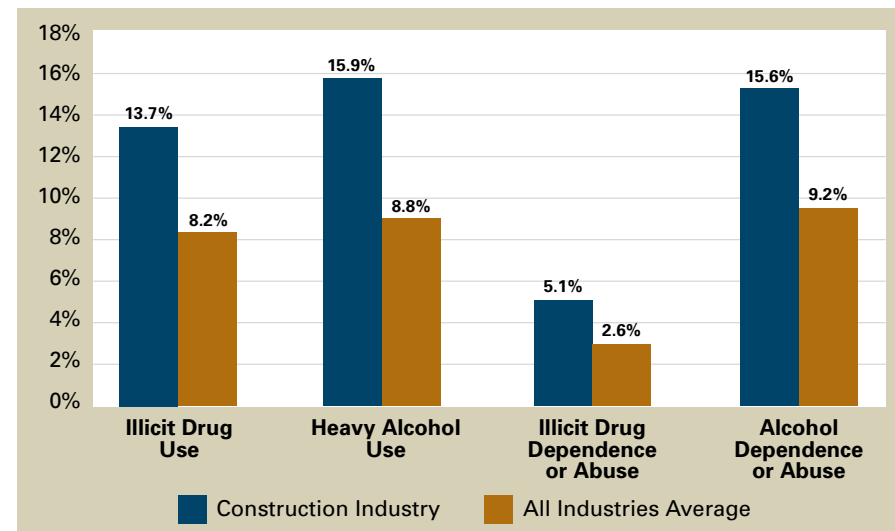
Zero Tolerance:

Illicit Drug and Alcohol Use in the Construction Industry

Before taking part in an objective and informed discussion of worker drug and alcohol testing in the precast construction industry, we need a valid frame of reference on which everyone can agree. Real-world statistics are critical in this very serious discussion, because a precast concrete employer's right to enforce drug and alcohol testing policies, based on a federal act, is not free from controversy. Some people say drug testing promotes safety while others will say mandatory testing violates privacy rights. Canada, for example, currently does not have a law that requires mandatory workplace drug testing, in part because of civil liberty concerns. So let us begin with the following statistics from the U.S. Department of Labor (DOL).

It's not a pretty picture that the DOL paints for us, is it? To put it into words: "The major industry groups with the highest prevalence of heavy alcohol use were construction, arts, entertainment and recreation, and mining, and those with the

Illicit Drug and Heavy Alcohol Use; Illicit Drug and Alcohol Dependence or Abuse



Illicit Drug and Heavy Alcohol Use, Dependence or Abuse Among Full-Time Workers Aged 18-64

| | Construction Industry | All Industries Average |
|----------------------------------|-----------------------|------------------------|
| Illicit Drug Use | 13.7% | 8.2% |
| Heavy Alcohol Use | 15.9% | 8.8% |
| Illicit Drug Dependence or Abuse | 5.1% | 2.6% |
| Alcohol Dependence or Abuse | 15.6% | 9.2% |

Source of table and chart: the U.S. Department of Labor

lowest were health care and social assistance and educational services."

Interestingly, the construction industry is right up there with the entertainment industry. True, "construction" is a very broad category and includes many professional trades, but for anyone who has ever walked the walk, there is no denying that construction is an inherently dangerous, stressful and physically demanding profession.

Federal acts provide the legal right to test

The Drug-Free Workplace Act of 1988 gives the right to (but does not require) employers to establish drug-testing policies and to have workers submit to drug and alcohol testing. The 1991 Omnibus Transportation Employee Testing Act does require transportation industry employers who have employees in "safety-sensitive" positions, such as commercial drivers, to have drug-free workplace programs, and the U.S. Department of Transportation (DOT) enforces this act. Labor and employment laws that relate to substance abuse policy for construction employers can vary from state to state.

These two U.S. acts, however, are not the reason why employers establish and strictly enforce drug-testing policies or why employees submit to tests, like urinalysis, for the presence of illicit drugs or alcohol. The reason we do these difficult and personally invasive things is because we all want a safe place to work. We all want to come home healthy, even if dog-tired, to our families at night. No one wants to see a co-worker injured. We all – workers and employers – want the same thing: the safest workplace we can manage.

A real commitment to safety means doing everything possible to prevent work-related accidents, including those that result from the use of alcohol and illegal drugs. Strict enforcement of a drug-free, substance-free workplace is a priority for any precast plant employer who has a heartfelt commitment to establishing and maintaining a "company culture of safety" that includes drug and alcohol education and awareness.

David Parkhurst, commercial agent with IBG (Insurance & Benefits Group) and a

certified work comp advisor, says, "Drug testing, like most safety programs, is all about the safety culture that a company is trying to create. If you develop a zero-tolerance culture for drug and alcohol abuse, you are effectively raising the bar for every member on your team. If an employee is abusing drugs or alcohol, he or she is not going to be able to shut off that lifestyle and attitude when clocking in to work. Drug addiction is a part of who they are, and unless they deal with it and can find a way to embrace the same zero-tolerance attitude, that employee will be a liability to the culture of safety you are trying to create." ■

Here's a test on illicit drugs and alcohol in the workplace you can administer during your regularly scheduled safety briefing or staff meeting. All are true/false statements, and the answers are below.

1. An employer is wise to focus on illicit drug use rather than alcohol abuse when developing a substance-free workplace policy. **T F**
2. Urine is the most common bodily specimen used to test for illegal drugs, and breath analysis is the most common test for alcohol. **T F**
3. There are four different bodily specimens that can be used to test for the presence of drugs and/or alcohol. **T F**
4. Because random drug testing is unannounced and each worker has an equal chance of being selected for testing, random testing serves as a deterrent. **T F**
5. Random drug testing is allowed in all states. **T F**
6. Post-accident testing for alcohol must occur within two hours, because alcohol is absorbed and eliminated more quickly than other drugs. **T F**
7. Barbiturates and cocaine have some of the shortest "detection windows" – the amount of time after ingestion during which evidence of their use can be detected – of the more commonly used illegal drugs. **T F**

Answers

1. **False.** According to the U.S. Department of Labor, failing to include alcohol, the No. 1 abused drug in American society, can undermine the effectiveness of drug-free workplace programs.
2. **True.**
3. **False.** There are six different bodily specimens that can be chemically tested to detect evidence of recent drug use: urine, breath, blood, hair, oral fluids (saliva) and sweat.
4. **True.**
5. **False.** Some states restrict or question an employer's ability to randomly drug test employees who are not in safety-sensitive positions.
6. **True.**
7. **False.** Barbiturates and cocaine can be detected in the body up to 10 days after ingestion.

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ALL THINGS ARE POSSIBLE

HOW A NEW JERSEY PRECASTER VANQUISHED A FOREBODING ECONOMY.

STORY AND PHOTOS BY RON HYINK

Boom! Crash! Rumble!

That's not a neighborhood garage band you hear in the background; they are the sounds of the past decade's housing industry. First came the housing boom, followed suddenly and decisively by its crash. After several years of meager existence, or nonexistence if you will, it is slowly rumbling back to life.

John Ruga and Robert Shanaman, owners of Northeast Precast LLC in Millville, N.J., had barely enough time to enjoy the profitability of the housing boom as a precast foundation wall manufacturer before the bottom dropped out, forcing them to leap onto other precast products sooner than they had anticipated to keep from sinking.

Fortunately John had been taught the value of a strong work ethic at an early age. When the economy knocked him down, rather than floundering about and crying uncle, he rolled over and got back on his feet. "My father instilled in us that the worst thing we could ever tell him was that it can't be done," he said. "He taught us every step of the way: Don't ever give up. You'll never see what's at the top of the mountain if you stop a hundred feet short."

A MOUNTAIN TO CLIMB

As in a tale of two economies, it was the best of times and it was the worst of times. Before the storm clouds of the economy blew in, it was a bright and sunny day for home builders. John had just started in the precast concrete industry as he realigned himself from the custom homebuilding industry to precast foundation walls. His was a small company in a big market. "We really did have good timing starting with the housing boom, where you almost couldn't do any wrong," said John. "Everybody was just as busy as



they could be in the housing industry."

John started in the precast business with a Superior Walls franchise, first as an installer and then as a manufacturer. His initial investment was in trailers and cranes so that he could haul the foundations from factories in Pennsylvania and New York and install them in South Jersey.

As business picked up, one of John's bigger investments was a 100-ton, all-terrain Liebherr crane. "Most people who knew me thought I'd lost my mind," said John, "and she probably wasn't far behind," referring to his wife, Lorie, the consummate multitasking office manager whom he frequently praises for her support in his business endeavors. "I wanted a crane that could do everything," he said, explaining that he was involved in other businesses that required the large crane, such as setting modular homes and cell phone towers. "So for the Superior Walls, the crane was way oversized but allowed me to go out and do other work."

Having built up the business over a few short years,

he was able to invest in his own manufacturing plant. "We purchased the land in May 2003," said John. It was raw land – 20 acres of trees and low-lying swamp – so he started to clear it in July that year. "We built the building ourselves, we poured all the footings and we were open Dec. 10, 2003 – our very first day of production."

At the time, the new plant housed 10 employees – who incidentally had no prior precast experience – in 25,000 sq ft of production space, which soon doubled in size. "We didn't have anybody here with any experience – just a lot of good employees who were dedicated and worked hard," said John. But the lack of experience had no lasting effect. "Our business took off so much in 2004, and in 2005 we added on the second half of the building." That put the plant at 50,000 sq ft for about 95 employees.

John and Robert invested heavily in equipment, land, a building, and a foundation wall franchise for which they were

pouring nearly 100% of their concrete. And then the bottom emptied out from under the housing industry suddenly and completely. Orders slowed to a trickle, and they had to lay off almost half of their employees. Cranes, trailers, forms and casting beds were no longer at maximum production and sat idle most of the time. There was no longer any money available from financial institutions – only bills to be paid to them. They had to do something quickly in order to survive.

FOUNDATION WALLS TO COMMERCIAL WALLS TO MSE WALLS

John had been working in commercial construction in a family business when he ventured out on his own in 1998 to work in home building, additions and renovations under the name of J Ruga Custom Builders. "That's when I got into foundation work, but it was all poured-in-place foundations," he said. "Back then

it would take me two weeks to do a foundation," which included footings, inspections and other time killers. Then one day in 2000 when he was working at one of his job sites, everything changed: Precast concrete revealed a better way for him.

"I saw some walls go by on a trailer, and then a crane," said John. "This was about 10 in the morning. I said, 'I'm going to go look at that at the end of the day,'" but when he arrived on site at dark nothing was there but the basement. "It's done! The trailer's gone, the crane's gone, and I was still tying rebar. I didn't even have an inspection for my footing."

The walls were manufactured by Superior Walls of America, so John contacted them right away and discovered that anybody could sell them into New Jersey, but nobody had bought the franchise. "It was open territory at the time," said Lorie, "so we decided to purchase the rights to South Jersey to protect our investment in time and equipment if we were successful."

And so John began to set foundation walls after driving at least 4½ hours one-way on weekends to pick up a single load. "The first year, I think we sold only five foundations – I was still doing house building," he said. "The second year we sold 18 foundations while still building some houses. And then the third year, we sold 86 foundations. That's when we started to think about building a plant here."

In 2003, they built the new plant and changed the company's name to Superior Walls of South Jersey. "We poured our first walls here in December 2003," said Lorie.

"North Jersey was still an open territory, and because of our growth, Superior Walls sold us that portion," John continued, explaining that he once again changed the company name in

JOHN RUGA'S MACHINE SHOP IS EQUIPPED TO QUICKLY FABRICATE WALL PANEL STUDS OUT OF LARGE ROLLS OF ALUMINUM STOCK. ONCE THE FOUNDATION WALLS ARE INSTALLED, DRYWALL OR PANELING CAN BE MOUNTED TO THE STUDS.



PRECAST CONCRETE HOME A FIRST FOR SOLAR DECATHLON

Every two years, the U.S. Department of Energy puts on a Solar Decathlon in Washington, D.C., during which teams from around the world bring to life their inventive architectural designs for energy-saving homes. The competition is fierce, as the teams are evaluated in 10 critical areas. But this year marked the first time a concrete home was put on display.

Made entirely out of precast concrete, including the shelving and the kitchen sink, the home was the brainchild of Team New Jersey, a partnership between Rutgers University and the New Jersey Institute of Technology. John Ruga and Robert Shanaman, owners of Northeast Precast LLC, cast and donated all the THiN WALL precast components of the home.

To John, it was more than just exposure and a lavish way to get his company name placed among those who contributed to the highly publicized competition. It was more about developing the character and work ethic of young people, most of whom are architectural students.

The home, built with the New Jersey seashore in mind, was designed to be cool inside during the summer with no air conditioning, and warm during the winter with radiant heat from the sun. "Even on a day when it's humid and there's no breeze, it feels like there's a fan on in the house – we could feel the air moving through it," said John, recalling when the home was being fit-tested in July. The home includes other energy-saving accents such as solar panels and an inverted hip roof to collect and use rainwater. "It's really a cutting-edge design."

Rather than just design the home, the students actually came to the precast plant to help create it – and it was an eye-opener for them. Although they were working with CAD programs and 3D modeling, when they came to the plant they discovered how it all fit together and realized there were some things they hadn't considered. John said he has always been thankful for the opportunities he had growing up working with his hands and seeing a project through to completion – and perhaps taking for granted the things that others struggle with. "This was a great opportunity to teach and work with the students, to give them an experience they would never get otherwise. That was the enjoyable thing for us, to help them and see them grow," he said. "They almost wanted to give up, because after the project was undertaken, they realized how difficult it was."

The solar home was a large, complicated and often frustrating project for the students. At one point, John overheard an exasperated student comment that he would never design anything like this again – but John was quick to provide encouragement. "That's not at all what they should take away from this," he said. "They should be proud that they came up with such a unique design – they had the vision to think of it."

John added that the students will be better off for the experience. "But while they may have thought that we were teaching them, they were teaching us and forcing us to go a little outside our comfort zone," he said. "And I think that's one thing that helped our company – that we've always been willing to push the envelope and try something new."





2005, this time to Superior Walls of New Jersey.

By that time, plant production consisted of nearly 100% foundation walls – just as the economy was about to take a dive and bring an end to the housing market. “When things started to go south, we attempted to scale back but just couldn’t scale back fast enough,” said John. He had to let some of the equipment go, followed reluctantly by letting nearly half the employees go. “There’s no question that we would have gone out of business in a matter of time. So we just worked extremely hard and put everything we had personally on the line.”

The diversification into other precast products began with commercial walls for churches, schools and small warehouses. But those were small jobs and not enough to sustain the plant. In a move to offer larger walls for larger jobs, John installed a 15-

ton overhead crane in the plant. “That definitely helped us get through,” he said.

Other precast offerings were soon to follow, including custom stormwater structures, custom bridge pieces, caps for piers along the Atlantic coast, and bird-prevention blocks that are installed in the piers to keep birds from building nests. We also sold precast blocks that serve as ballasts where the ground cannot be augered for anchors, such as for solar arrays and custom generator pads for power stations.

With a growing number of custom products unrelated to walls, John finally changed the name of the company to Northeast Precast. “People thought we were drywallers, or they thought we hung wallpaper,” he said. “So we wanted to let everybody know that if it was made out of precast concrete, we

INTERCHANGE 6 ON THE NEW JERSEY TURNPIKE INCLUDES MSE WALLS, TRAFFIC BARRIERS AND LIGHT STANDARDS - ALL PRODUCED BY NORTHEAST PRECAST.

could do it. And we didn’t want to limit ourselves to just New Jersey.”

Ever marching forward, John’s most recent investment was in forms for MSE walls. With a reputation for quality products, a competitive bid and a little getting-to-know-you face time with the people at George Harms Construction Co., he got started on solid ground with his new venture.

THE BRIDGES OF BURLINGTON COUNTY

Interchange 6 on the New Jersey Turnpike is shaping up nicely, thanks in part to precast concrete. The four-year widening program will add additional lanes in each direction that will allow car and truck traffic to have separate lanes. “To accommodate all that, we have to redo all the exit and entrance ramps into Interchange 6,” said Edward Panuska, vice president of Project Management with George Harms Construction Co. “We’ll put in eight new steel structures with new ramps, and the approaches for most of those ramps are borne by MSE walls.”

When the project is complete, there will be 24 MSE walls – or about 182,000 sq ft – cast by Northeast Precast. “It is a major part of the project,” said Edward, but the real significance is that it marks Northeast Precast’s debut into the MSE wall business. “This is our first contract with Northeast, so there was some hesitation,” added Edward, “and we had to get to know each other and get a feel for each other, and off we went.”

It was not something John took lightly. “We knew they were sticking their necks out a little to go with this, and we had to produce,” he said. “It’s been a tremendous learning curve for us, but we couldn’t have picked a better contractor to get started with.”

In addition to the MSE walls, Northeast is supplying all the precast traffic barrier. “And not only the barrier, but he’s also doing precast light standards and light poles,” added Edward. The barrier and light poles are unique in that all the electrical conduits are embedded – another custom product by Northeast. “He’s been able to do all that, which is not the norm for some of these precasters, who will just do the standard piece.”

It helped that Northeast was the low bidder, but that was not George Harms’ only concern. “If he wasn’t able to produce, it would obviously stop the job in no time,” said Edward. “It was very close coordination with John and the engineer. We had to agree on schedules, we had to agree on priority.” Edward was also impressed with the enclosed casting facilities at Northeast Precast that allowed production to continue when weather was a factor for other manufacturers. “He’s well ahead of us with casting, so if there are any schedule impacts, unless something drastic goes wrong, it’s certainly not going to be by Northeast,” he said.

“Since this first contract with George Harms – which we will always be thankful for – we have contracted an additional 500,000 sq ft of MSE

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walls on the New Jersey Turnpike, Garden State Parkway and our first job in Delaware, which has approximately 167,000 sq ft of MSE walls," said John. "We have continued to expand into the DOT market while still maintaining a high level of service and commitment to our customers."

Putting a face to the name has gained some yardage for Northeast Precast, not only with George Harms but also with other firms. A free lunch can usually attract a small group to get your company name in front of the right people – but to get them to listen is a challenge in itself. "When we first go in, they're a little reserved," said John. "You're not sure how it's going to go. But then they're intrigued when we start showing them pictures

of projects that are ongoing or we have completed."

These Lunch and Learn sessions for engineering firms can make a bold statement about who you are and what you can do for them. "We encourage these architectural engineers to talk to our clients," said John. "We have a good reputation, and people know how hard we work – and that is one of the trademarks of our company, how we'll go the extra mile."

All the strategies that John and company brought to bear have helped them survive the housing crash – and in fact grow in the face of economic collapse. Being quick to invest in new products while on the verge of bankruptcy paid off for John.

NORTHEAST PRECAST'S PRODUCT LINE ORIGINALLY BEGAN WITH SUPERIOR WALLS FOUNDATIONS, WHICH IT CONTINUES TO MANUFACTURE TODAY.

"We struggled to get by," said John, adding that it all started to pay off in late 2010 and early 2011. "Halfway through 2011, our commercial business really started to pick up." For the first time in years, he had a backlog of work, including the Superior Walls contracts.

John is quick to credit his partner Robert Shanaman and employees. "Without the people we have, we'd be dead in the water," he said. "They accept the challenges we put before them, and a lot of that is self-motivated – I mean, we put up a few challenges and they take it a step further than what we were envisioning."

Despite not having precast experience, the employees stepped up to learn the business, and then despite the economic situation that nearly put them out of business, they remained dedicated and stuck to the course. Could that positive work ethic have rubbed off from their leader? "It's a credit to my father," said John. "He drilled in us that there's nothing impossible unless you don't want to attempt it." ■

Ron Hyink is NPCA's managing editor.



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U.S. Infrastructure Funding

Failure to act is leaving us falling apart and falling behind.

BY WILLIAM ATKINSON

Look what's happened to America's infrastructure. According to construction industry watchdogs and front-line observers, things are looking rather bleak because of neglect and a lack of funding for too many years. In this dark economy, is there any hope for a reversal of this trend?

Earlier this year, the American Society of Civil Engineers reported: "In 2010, it was estimated that deficiencies in America's surface transportation systems cost households and businesses nearly \$130 billion. This included approximately \$97 billion in vehicle operating costs, \$32 billion in travel time delays, \$1.2 billion in safety costs, and \$590,000 in environmental costs."

Another transportation infrastructure report, "Building America's Future: Falling Apart and Falling Behind," published by Building America's Future Educational Fund, found that U.S. infrastructure has fallen from first place in the World Economic Forum's 2005 economic competitiveness ranking to No. 15 today. The report goes on to note that even as the global recession has forced cutbacks in government spending, other countries are investing significantly more than the United States to expand and update their transportation networks.

Canada spends 4% of its GDP on transportation investment and maintenance, and China spends 9%, compared with the United States' 1.7%, it says.

In addition: "The U.S. is one of the only leading nations without a national plan for public-private partnerships for infrastructure projects or a National Infrastructure Bank (NIB) to finance large-scale projects and leverage private capital. While we fail to leverage government dollars to attract private investors, billions of dollars of private capital are flowing to infrastructure projects in other countries. While Congress continues to bicker over legislation to create a National Infrastructure Bank, the European Investment Bank in 2009 lent \$116.7 billion to infrastructure projects, of which \$23 billion were transportation projects."

Current perspectives

"The government does a lot of things," notes Ty Gable, president of the National Precast Concrete Association. "A lot of what it does is nice to have, but it doesn't need to be done. Infrastructure, however, is a necessity. It is as important as defending our shores." If this country neglects its roads, bridges, highways, stormwater management and sewage management, it has horrible implications for public safety and public health. "We simply cannot wait to do projects, patch things up and hope for a better day."

In fact, according to Gable, patching up is what happened with shovel-ready projects. "Shovel-ready meant they were just going to patch potholes, weld bridges or extend turn lanes," he said, adding that these were nice but didn't put a lot of people to work. "The way to put people to work is to move dirt."

Gable notes that there are bridges in this country that school bus transportation officials route around, because they can't carry the load of a school bus. If we don't fix

these bridges, public safety and public health are adversely affected, he says.

As Brian Pallasch sees it, his goal is to always be hopeful and to continue to think that we can overcome some of the challenges related to infrastructure advancement and funding. "I think the infrastructure community has made a tremendous amount of progress in the simple concept that folks now acknowledge that we have a significant infrastructure problem," says Pallasch, managing director of government relations and infrastructure initiatives for the American Society of Civil Engineers (ASCE) in Reston, Va. "So, we have accomplished Job One. There is a strong understanding that our infrastructure is in bad shape and is getting worse."

ASCE has published report cards since 1998. They are backward-looking, in that they ask and answer the questions: "Over the last four years, how has our infrastructure fared? Did we make any progress on making these better?" While there have been a few places with bright spots, progress has been difficult since 1998, says Pallasch. In its forward-looking report ("Failure to Act: The Economic Impact of Current Investment Trends in Surface Transportation Infrastructure"), the first in a series, ASCE looks at what will happen to the U.S. economy if the government maintains its current funding level. "Like the report cards that we have been releasing for 14 years, the outlook in this year's study is not necessarily a good story, either," says Pallasch. "If we don't do some of the work that needs to be done, the economy will take a hit, families' standards of living will take a hit, and from a global perspective we end up losing exports."

According to Marcia Hale, president of Building America's Future, Washington, D.C., a case has to be made that we need to do better and more investing in infrastructure. "A major reason is that we are beginning to fall behind our economic competitors in this area," she says. "We are not building the type of infrastructure that is necessary for us to compete in the future. However, I don't think there is any doubt that, at some point in the future, we will see some fairly aggressive attempts to build new infrastructure."

Funding

Of course, the big question on everyone's mind is funding. Is there funding available? If so, what are the sources?

First, though, what has happened with past funding, especially the stimulus package? "We are seeing the last of the stimulus money this summer," says John Lendrum, president

of Norwalk Concrete Industries in Norwalk, Ohio. "I am a little concerned about the ability of state and local governments to continue infrastructure spending at the same rate." Lendrum believes that there will be some drop-off, at least in his region.

Although tax revenues have started to come back up a little, they're still not where they need to be. "In order to balance the budget, a lot of money that used to flow to the local level from the state has been cut," says Lendrum. "As a result, small villages and municipalities have less flow-through money for things like paving, water, sanitary improvements and other projects." Once the stimulus money ends, Lendrum expects to see a drop-off in this type of work.

"I think one of the biggest needs that is not being addressed these days is electrical infrastructure," continues Lendrum. "No one seems to be looking at that very hard. It is underground, so you don't notice it until the 'juice' is off. Everyone sees the potholes in the roads." Of all of the funding programs that are being put out there, Lendrum believes that electric prime power



Photo courtesy of Barbour Concrete Co.



NPCA file photo

distribution is one that has not been looked at as hard as it should be.

Gable notes that America's infrastructure is publicly financed using various funding mechanisms, such as taxes. Specifically, transportation infrastructure has been funded for many years by a "cents per gallon" tax that goes into the Highway Trust Fund, which is used to maintain roads, highways and bridges, and also build new ones. "Obviously, with energy costs increasing, people are driving less and are investing in more fuel-efficient cars," he says. "As a result, this funding mechanism becomes less and less. This poses a challenge, so we need to begin looking at other ways to fund infrastructure."

Gable adds that the Highway Trust Fund has always been controversial. The last time we had a highway bill was 2003, and it was for six years. "Since 2009, we have been extending the old bill by six months here and there, kicking the can down the road," he says. "These stop-gap measures are not doing any good, because states, counties and cities need ample notice before they can commit the resources to plan, survey, acquire land and even begin the process of building a new bridge or highway." All of this costs money, and state and local governments are not going to commit this money if they don't know if or how much funding is going to come from the federal government.

We went to Congress a year ago and pleaded, "We know times are tough. Why don't you cut the transportation funding by 30%, but pass it as a six-year bill?" According to Gable, the idea fell on deaf ears, and Congress is still arguing. The latest proposal is to extend it for two years. This still isn't enough time, though. "That six-year time period is there for a purpose," notes Gable. "This gives states and local governments the time to plan, build and pay for projects."

According to Pallasch, we are in an interesting time. "The deficit commission report that came out last December suggested that we need to spend additional resources on transportation infrastructure," he says. "For many of us, the next few months will be spent trying to convince this new super-committee that was created in early August 2011 that, as they try to search for solutions to the nation's deficit problem, they also try to find a solution for the infrastructure investment deficit."

Hale believes that funding for infrastructure will come from a combination of federal, state/local, and private sources. "The times almost insist that there be some outreach to the private sector through either public-private partnerships or a National Infrastructure Bank that would help finance critical infrastructure across the country," she says. "These would probably be very large-scale projects that encompass several states."

Strategies

As Hale sees it, those involved in infrastructure should have at least three goals for the near term. "We need to have a final Federal Aviation Administration bill done," she says. "We need to reauthorize the Surface Transportation bill, which expired Sept. 30. Third, we need to create some interest and

enthusiasm for a National Infrastructure Bank."

Here are some recommendations for precasters on how to help get things moving toward these and other goals:

1. "Get in touch with your legislators at all levels of government – federal, state and local – because all levels have a role in infrastructure," suggests Pallasch.

Lendrum agrees. "Stay in touch with your legislators, and tell them what is important to your business," he says. "Everyone else is doing it, so precasters should be doing it, too. You should also be able to get help doing this through your state contractors association. Road contractor associations, for example, are all lobbying to get the new transportation bill passed."

Gable says, "We at NPCA can only do so much at the national level, going to Washington. What is important to realize is that all politics is local," adding that precasters need to get to know their city and county council people, their mayors and their congressional representatives. They need to make appointments with their congressional representatives when they are in town. "Then look them in the eye and explain how lack of funding for infrastructure negatively affects their employees and citizens, and how funding means jobs," says Gable. Precasters should also attend town hall meetings and try to get infrastructure development on the agenda.

2. Pallasch has heard of some other organizations getting started with another strategy, and he believes that it is something that ASCE also needs to look into. "It's not enough to just have people within our industry talking to legislators about how important infrastructure is," he explains. "It is quite obvious to a legislator why a civil engineer or a precaster cares about infrastructure funding." Maybe it is time that people in the industry actually go out and talk to other people who are not in the industry. One organization with which Pallasch is familiar has a program that encourages each of its members to go out and talk to at least five other people who have no relationship at all to the industry. These can be people at a PTA, a church, or elsewhere. "Then explain to these people why a good road or good water infrastructure is important," he suggests. "It is important to explain to these people what has been going on and what might go on to get them to focus on what we need to do to make a difference." In other words, don't just focus on saying "We need more money." Focus on explaining why infrastructure investment is good for the economy and the nation as a whole. Then encourage these people to become advocates for infrastructure funding and talk to their legislators.

3. The other thing precasters can do, according to Norwalk's Lendrum, is look at cast-in-place projects and try to convert them to precast. "There are still a lot of projects where cast-in-place is specified, but which are certainly suitable for precast," he says. ■

William Atkinson, Carterville, Ill., is a freelance writer who covers business and safety issues.



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THE PRECAST SHOW SCHEDULE

For the meeting and special event schedules of each partnering association, please visit ThePrecastShow.org.

MONDAY, FEB. 27

Noon - 6:00 p.m. Exhibitor Move-in
1:00 p.m. - 6:00 p.m. Exhibitor Registration (Rear of Exhibit Hall)

TUESDAY, FEB. 28

7:00 a.m. - 6:00 p.m. Registration Open (Rosen Shingle Creek)
8:00 a.m. - 6:00 p.m. Exhibitor Move-in
8:00 a.m. - 6:00 p.m. Exhibitor Registration (Rear of Exhibit Hall)

WEDNESDAY, FEB. 29

7:30 a.m. - 6:00 p.m. Registration Open
8:00 a.m. - 6:00 p.m. Exhibitor Move-in
8:00 a.m. - 6:00 p.m. Exhibitor Registration (Rear of Exhibit Hall)

THURSDAY, MARCH 1

6:00 a.m. - 10:00 a.m. Registration Open (Rosen Shingle Creek)
8:00 a.m. - 10:30 a.m. Exhibitor Move-in
8:00 a.m. - 12:30 p.m. Exhibitor Registration (Rear of Exhibit Hall)
12:30 p.m. - 7:00 p.m. Registration Open (ICCC)
1:30 p.m. - 3:30 p.m. Precast Show Education
3:30 p.m. - 8:30 p.m. Grand Opening Reception
3:30 p.m. - 8:30 p.m. Bookstore Open
5:00 p.m. - 8:00 p.m. HOT (Hands On Training)

FRIDAY, MARCH 2

6:30 a.m. - 6:00 p.m. Registration Open
7:30 a.m. - Noon Precast Show Education
Noon - 6:00 p.m. The Precast Show Open
Noon - 6:00 p.m. Bookstore Open
1:00 p.m. - 2:00 p.m. HOT (Hands On Training)
3:30 p.m. - 4:30 p.m. HOT (Hands On Training)

SATURDAY, MARCH 3

6:30 a.m. - 6:00 p.m. Registration Open
7:00 a.m. - 11:00 a.m. Precast Show Education
11:00 a.m. - 3:00 p.m. The Precast Show Open
11:00 a.m. - 3:00 p.m. Bookstore Open
11:30 a.m. - 12:30 p.m. HOT (Hands On Training)
1:00 p.m. - 2:00 p.m. HOT (Hands On Training)

SUNDAY, MARCH 4

7:30 a.m. - 5:00 p.m. Precast University Education

MONDAY, MARCH 5

7:30 a.m. - 2:00 p.m. Precast University Education

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Remember, our Early Bird registration will save you money, so register before Feb. 2, 2012, and take advantage of discount pricing.

WEBSITE

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Early Bird Discount Ends: Feb. 2, 2012
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Precast Show Education: Feb. 28-March 3, 2012
Precast University Education: March 4-5, 2012

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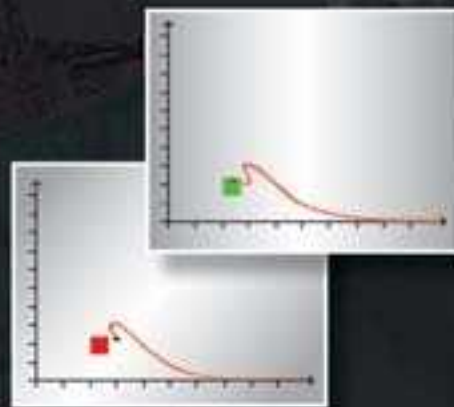
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NPCA Convention Wrap-Up



PAUL AKERS, A LEAN MANUFACTURING EXPERT, KEYNOTED THE CONVENTION.

Against the backdrop of a stagnant economy, the NPCA 46th Annual Convention drew its third-largest attendance with a program heavily tilted toward lean manufacturing. Held at the Coeur d'Alene Golf and Spa Resort in Coeur d'Alene, Idaho, the annual event brought 361 members together for educational programs, committee meetings, the NPCA Annual Business Meeting and a host of other events. Here are a few highlights. For additional Convention coverage, please visit precast.org/convention.

NEW OFFICERS

NPCA elected its slate of officers for the coming 12 months at its Annual Business Meeting, held Oct. 15. Tom



DAN HOUK (LEFT) PASSES THE GAVEL TO NEW NPCA CHAIRMAN OF THE BOARD TOM ENGELMAN.

Engelman, president of Bethlehem Precast Inc., Bethlehem, Pa., was elected NPCA Chairman of the Board of Directors by a unanimous voice vote of the NPCA membership.

Engelman, who has been president of Bethlehem Precast since 1994, told the audience during his acceptance speech that his experience in concrete goes back to 1966, when his father Al put in a concrete driveway and recruited him and his three brothers – and his mother – to help.

"We were the labor – four little boys ages 8 through 11 – and my mom," he said. His father eventually started a construction company and then, in 1980 bought a precast plant. Engelman has

been active with NPCA since 1992 and has served a variety of roles, including Transportation Committee chairman, member of the Board of Directors, secretary/treasurer and president-elect.

The NPCA officers and new Board members are:

Chairman

Tom Engelman
Bethlehem Precast Inc., *Bethlehem, Pa.*

Chairman-Elect

Mimi Rainero Coles
Permatile Concrete Products Co., *Bristol, Va.*

Secretary/Treasurer

Brent Dezember
StructureCast, *Bakersfield, Calif.*

Immediate Past President

Dan Houk
Wilbert Precast Inc., *Spokane, Wash.*

Elected to 3-year terms on the NPCA Board of Directors:

Stewart Luckman, Columbia Machine Inc., *Vancouver, Wash.*

Ashley Smith, Smith-Midland Corp., *Midland, Va.*

Greg Stratis, Shea Concrete Products, *Amesbury, Mass.*

Andy Wieser, Wieser Concrete Products, *Maiden Rock, Wis.*

ROBERT E. YOAKUM AWARD

The industry's longest-running and most prestigious award, the Robert E. Yoakum Award, was presented to Darryl Cloud, national sales manager for Concrete Sealants Inc., Tipp City, Ohio. Cloud, a 21-year employee of Concrete Sealants, served on the NPCA Board of Directors from 2003-2006, and is currently a member of the Onsite Wastewater Product Committee. Cloud accepted the award to a standing ovation, and in a brief speech said, "I've considered everyone in this room an extension of my family. This is a huge honor. It's just a real privilege to get up and look forward to going to work, not only for the company that I work for, but for the industry I've been a part of."

DOUGLAS G. HOSKIN AWARD

NPCA presented the Douglas G. Hoskin Award for membership development to Dan Houk, president of Wilbert Precast Inc., for member recruitment during the previous 12 months.



DARRYL CLOUD (LEFT) ACCEPTS A CONGRATULATORY HANDSHAKE FOR WINNING THE YOAKUM AWARD FROM JOE WIESER, WHO WON THE AWARD 30 YEARS AGO, IN 1981.



NPCA MEMBERS MEL MARSHALL (LEFT) AND JOHN HIGGINS II.

LEAN MANUFACTURING

Lean production was a central theme of the Convention, with efficiency expert Paul Akers leading two educational sessions on the topic and delivering the keynote address. Akers is the founder and president of FastCap LLC, an international product development company based in Bellingham, Wash. Akers described how he has created a lean culture at his company by empowering his employees, encouraging them to bring ideas forward and developing efficiencies in all work processes and in every location of the plant – from the bathroom to the production floor. For more on Paul Akers and his lean manufacturing concepts, visit www.fastcap.com.

PRECAST MARKETPLACE

The NPCA Convention also featured its annual Precast Marketplace, with a sold-out exhibit area of 60 Associate Member companies. To see a list of Precast Marketplace exhibitors, please visit precast.org/convention.



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Sustainability through Reinforcement

BY CLAUDE GOGUEN, P.E., LEED AP

There are many definitions of sustainability, but one of the simplest is: "The ability to meet the needs of the present without compromising the ability of future generations to meet their own needs."

As the emergence of green buildings, green developments and LEED certified buildings continues to grow, building with sustainable products is quickly becoming the new normal. Precast concrete is a sustainable product for many reasons, but for the purposes of this article, we will concentrate on how steel reinforcement plays a part in sustainability.

Factors that define a building material's sustainability include its durability, transportation cost, efficiency, recyclability and distance from resources.

Durability

Steel reinforcement plays an important role in precast concrete for a number of reasons: Steel handles tensile stresses, bridges cracks and provides ductility. Precast concrete is very strong in compression; however, when subjected to tensile stresses, it needs reinforcement that can absorb these loads. Durability of precast concrete structures is essential to sustainable construction and the proper use of reinforcement has a direct impact on durability.

It is important to protect the reinforcement against corrosion. Enhancing the corrosion-resistance properties of the reinforcing materials in the structure can substantially improve the durability of the precast concrete structure. Precast concrete structures that use conventional reinforcing steel bars have proven their ability to provide long lasting, nearly maintenance-free service lives. In applications where the structure is exposed to

chlorides, moisture and oxygen, additional measures may be used such as increasing concrete cover over the reinforcement, using corrosive inhibitors or using epoxy-coated, galvanized or stainless steel reinforcement.

Enhancing the ability to reduce transportation costs

When using precast concrete components on a project, it is important to optimize the size to reduce structural mass and the number of pieces for the project. Transportation energy, emissions and cost savings will result from the need to transport less material and thus reduce the overall transportation carbon footprint. Reinforcement, both conventional and prestressing, allows for longer spans and thinner structural members due to its enhanced ability to resist tensile stresses in the field.

Steel reinforcing bars in current practice are typically Grade 40, 60 or 75, which means they have a yield strength of 40,000, 60,000 or 75,000 psi. High-strength reinforcing steel products are also becoming more readily available. Grade 80 bars with a yield stress of 80,000 psi were adopted into the ASTM in 2009. ACI 318, "Building Code Requirements for Structural Concrete," has adopted the limited use of Grade 100 steel for use as confinement reinforcement, such as ties or spirals, in compression members. Higher-strength reinforcing products can, in some instances, provide a proportional replacement for lower-strength materials, which can result in thinner and lighter pieces.

Smaller and more efficient buildings

Some prestressed slab systems can reduce the floor-to-floor and building height compared with a steel structure of similar bay sizes. This, in turn, reduces the material needed for vertical

elements such as concrete, mechanical and electrical systems, elevators and curtain wall systems. The reduction comes not only from thinner slabs but also from shorter floor-to-floor heights once the building systems are incorporated. The amount of interior space to heat and cool is also lowered, which results in a lower carbon footprint for energy use. The energy required to vertically transport liquids, gases and cooled air, and to move occupants between floors, is also reduced.

Recycled content

Conventional reinforcing used in precast concrete generally has a very high level of recycled content, and this can be of particular interest to those trying to achieve a LEED level on their project.

The following statement has been prepared and approved by the Concrete Reinforcing Steel Institute's (CRSI) Technical Committees regarding the percentage of recycled materials content for steel reinforcing bars:

"The vast majority of conventionally available reinforcing steel (ASTM A615 and A706) has recycled material content typically greater than 97 percent. Specialty reinforcing steel products, such as ASTM A1035 low-carbon, chromium steel and ASTM A955 stainless steel, have a recycled content typically greater than 75 percent."

Wire and welded wire reinforcement is typically produced with 92 to 97% recycled material content. Reinforcing steel (bars, strand and wire) is also 100% recyclable at the end of the useful service life of the structure. This recycling loop keeps material from the waste stream.

When supplying products for a LEED project, simply request a statement from your steel supplier with information on the recycled content of the product. This will help contribute to points under MR4 (Materials and Resource) – Recycled Content section of the LEED guide.

Regional materials

Currently, under LEED section MR5 – Regional Materials, you can obtain points toward LEED credits if the materials or products have been extracted, harvested and manufactured within 500 miles of the project site. This may get a bit confusing with reinforcing as the extraction of the scrap used could be from anywhere in the world. A position statement from CRSI clarifies this point as follows:

- **Point of Manufacture (final assembly):** *The fabricator takes the reinforcing steel and modifies it, therefore, considered to be the point of manufacture.*
- **Point of Harvest:** *The steel billet producer is considered the harvester or point of harvest.*

Simply consult with your steel supplier as to the locations of these two points to verify whether or not they fall within the 500 mile radius of the project site, and therefore contribute to this credit.

Conclusion

Proper selection and placement of reinforcement is essential to quality precast concrete products, whether it's for a bridge beam or a septic tank. Properly designed, concrete and steel, acting as one, can efficiently resist live and dead loads for more than 100 years. Steel that would otherwise be bound for landfills is successfully recycled in reinforcement and provides a long life in service.

The durability and environmental stewardship that result from using recycled steel reinforcing define sustainability. Engineering and architectural students, the designers and decision makers of the future, are now being exposed to sustainable construction as a primary subject matter. Understanding and maximizing the sustainable attributes of raw materials, like steel, will result in green precast concrete building designs and a better future for all of us. ■

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



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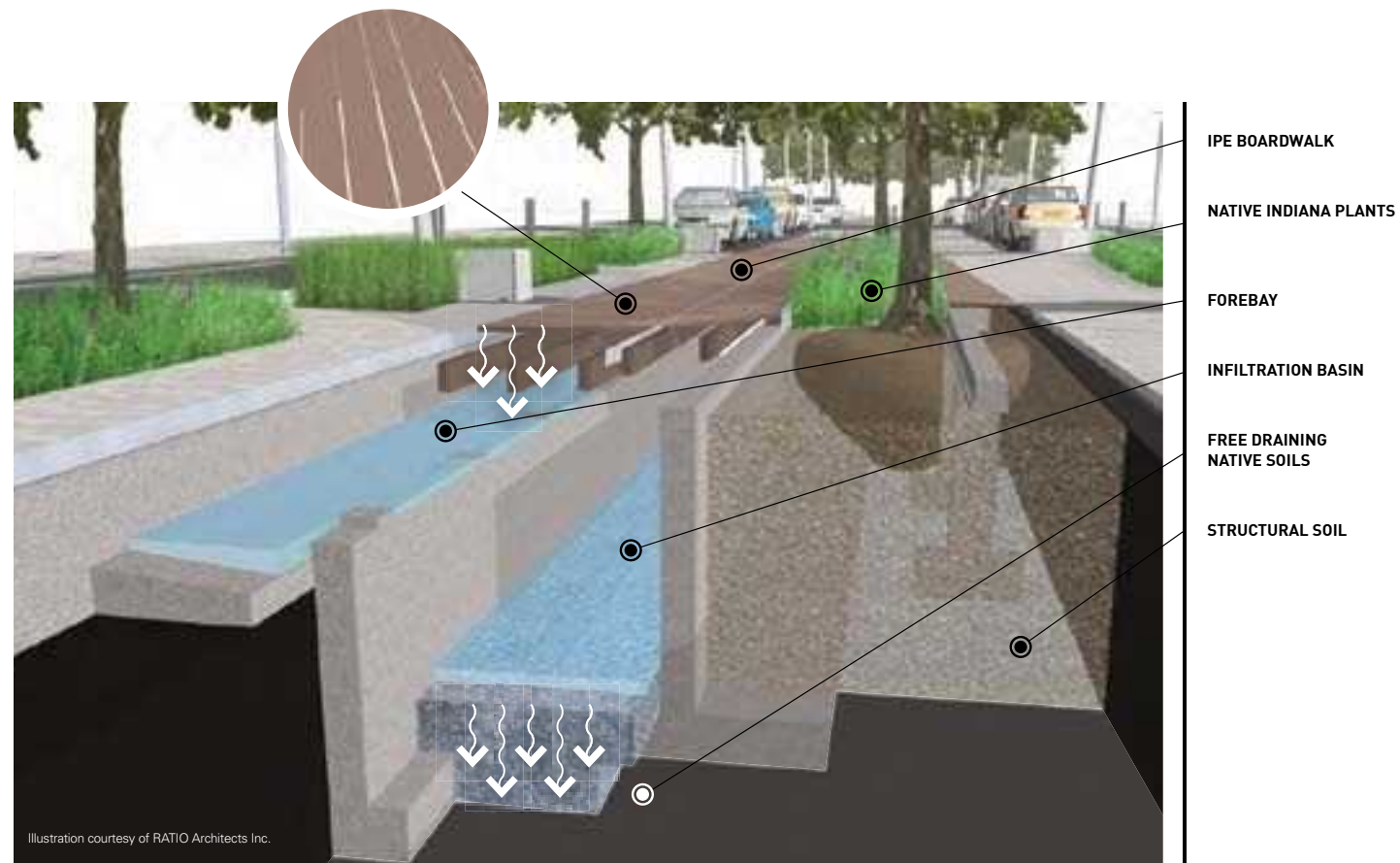
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Precast Tackles Super Bowl Walk

Indianapolis has a game plan for the February 2012 Super Bowl XLVI.

BY SUE McCRAVEN

When thousands of football fans invade downtown Indianapolis in February, they'll be doing their own version of the Super Bowl shuffle on a festive new three-block Pedestrian Promenade that will be a focal point of the revelry surrounding Lucas Oil Stadium, home of the Indianapolis Colts and site of the big game. While the party goes on above ground, one of the more unique aspects of the Georgia Street Improvements will be buried underground – an innovative water-recycling stormwater sluiceway constructed from a series of custom-designed precast concrete elements.

Cast-in-place utility vaults and stormwater culverts were part of the initial construction plans for the Georgia Street Reconstruction Project, also called Indy's Super Bowl Pedestrian Promenade. On those plans, only the grade beams were to be of precast concrete. John Lendrum of Norwalk Concrete Industries, the precaster for the project, spotted an opportunity and pounced.

Sideline run

"As producers, it is a daily challenge for our sales force to educate specifiers and owners on the advantages of precast components versus cast-in-place construction," said Lendrum. While looking at the drawings, he saw that precast utility structures would not require as large an excavation, as lengthy a delivery and installation time, nor create as much site disruption as cast-in-place site work. He deftly used this consulting opportunity to present his case to gain possession of additional underground work.

After submitting his proposal to Hunt Construction Group, the contractor for the project, Lendrum contacted Delta Engineers, Architects & Land Surveyors, a specialty precast engineering firm, requesting the load calculations for a precast concrete drainage system (see Precast Solutions magazine, Fall 2011 issue, "Precast Tackles Super Bowl Walk").

Precast staff loves a challenge

The people on Norwalk's staff contributed their ideas too. While many of the precast elements required custom casting, "our staff found the sluiceway work challenging, fun and mind-expanding," said Lendrum. New custom forms were built in-house and, once fabricated, were used for all the culvert pieces. In the planning stages for the project, "production staff constantly suggested ways to make the project better, and their enthusiasm made the project all the more exciting."

Precasters often relish unusual assignments, because a challenge perks up the staff. Unique applications are more invigorating than just stamping out identical pieces. It's a misconception, said Lendrum, that production staff is adversely affected by novel or difficult projects. Quite the opposite, in fact: By involving the precaster at the early planning stages, the contractor was able to take advantage of many decades of precasting experience at the production level that gave the project added value.

Precasters need to get off the bench

In business, no different from the gridiron, opportunity is where you find it. Especially in today's uncertain business outlook, producers must go after projects that have routinely been the home field of cast-in-place construction. "Designers often specify cast-in-place concrete, because they don't fully understand the added value and construction savings that may result from using precast," said Lendrum. "Conversion of a cast-in-place design to precast is an option that producers can pursue to increase sales."

By getting in the game early to convince owners and engineers of the advantages of precast and by staying close to design engineers, producers can gain new work. Here's Lendrum's game plan:

1. Propose alternative solutions to owners and emphasize precast's lower labor costs for high-quality, plant-produced product. By convincing owners to look at precast concrete's measurable benefits, including rapid delivery and installation with minimal site disruption, producers like Norwalk and specialty precast engineers like Delta can gain new market territory.
2. Cultivate relationships with engineers so that they view precast solutions as a value-added product. To accomplish this, it is essential that producers provide engineers with the "nuts and bolts" of precast systems, because engineers determine

the building systems used, particularly in regard to subgrade work. For example, once the cross section of the footing design for Indy's Super Bowl Promenade was redesigned in precast, Delta Engineers substantially reduced the trench's material weight, project timetable and site disruption.

3. Huddle with architects so that they are aware that precast building cladding offers many aesthetic, color, dimension and textural possibilities that improve the conceptual appearance.
4. Allow the plant staff to carry the ball. An important aspect of competing with CIP for non-commodity precast work is found on the plant floor.

In today's business climate, precasters need to think outside the box to capture new business opportunities beyond traditional product lines.

With the lengthy official name "A New Urban Outdoor Event Venue: Georgia Street Improvements, Indianapolis," this unusual and innovative project will literally "deck out" downtown Indy in grand style for Super Bowl XLVI fans. And while the above-ground wooden boardwalk, beautiful architectural treatments and gorgeous landscaping will likely wow the crowd, it is what now lies under the street that is the really good news for the precast industry currently struggling in a sluggish business climate. ■

Sue McCraven, NPCA technical consultant and Precast Solutions magazine editor, is a civil and environmental engineer.

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- PROJECT ENGINEERING:** Crawford, Murphy, & Tilly Inc., Indianapolis
- PRECAST DESIGN ENGINEER:** Delta Engineers, Architects and Land Surveyors, PC, Endwell, N.Y.
- PROJECT CONTRACTOR:** Hunt Construction Group, Indianapolis
- PRECASTER:** Norwalk Concrete Industries, Norwalk, Ohio
- PROJECT ARCHITECT:** RATIO Architects Inc., Indianapolis

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.

HawkeyePedershaab adds to marketing team

HawkeyePedershaab, a manufacturer of concrete pipe and manhole machinery based in Mediapolis, Iowa, has announced that Ron Schriever joined the company as part of its international marketing team.

Schriever, previously with Besser Co., has 45 years of experience in the concrete pipe machinery business and a vast background providing solutions to producers. His expertise, especially with the packerhead production process, will be of great benefit to HawkeyePedershaab's customers and will help drive its new ePak production technology, says the company.



RON SCHRIEVER

Schriever will provide technical expertise to concrete pipe producers in North America and throughout the world. Contact him at (515) 441-4685 or at ron.schriever@hawkeyepedershaab.com.

For more information about HawkeyePedershaab, visit www.hawkeye-pipe.com.

MPS/Centurion names AIRMATIC as exclusive distributor

AIRMATIC Inc., a distributor of industrial equipment and machinery based in Malvern, Pa., has announced an exclusive product distribution agreement with MPS Inc., Kewanee, Ill., the



North American distributor of Centurion Safety Products. This agreement encompasses Centurion's unique line of lightweight ANSI-approved head protection helmets, hardhats and bump caps.

AIRMATIC's 60-plus years of experience in the safety supply business and its reputation for service excellence makes it the ideal choice to be the New England and Middle Atlantic states regional distributor, said MPS.

AIRMATIC said it is especially excited about the CONCEPT hardhat because of its light weight, and the COOL CAP baseball bump cap.

For more information about AIRMATIC, visit www.airmatic.com.

Lafarge introduces portland-limestone cement in Canada

In response to ever-increasing market demand for sustainable building solutions, Lafarge recently introduced a new portland-limestone cement (PLC) commercial offering in Canada. Widely used in Europe for more than 25 years, PLC is a new category of cement that provides performance similar to conventional portland cement with up to 10% less CO₂ emissions, says the company.

Approved for use by the Canadian Standards Association, the National Building Code of Canada, and the British Columbia,

Ontario, and Quebec Building Codes, PLC is produced by intergrinding portland cement clinker with between 6% and 15% limestone. Based on a number of trials, considerable testing and Lafarge's innovative approach to PLC, the new cement with up to 15% limestone – well below the 35% limit in Europe – will achieve comparable performance to regular portland cement in terms of concrete workability, set time, durability and all ages of concrete strength development.

Because of these performance similarities and the significant sustainability advantages, Lafarge will start the transition from regular portland cement to PLC this year. Customers in British Columbia, Ontario, and Quebec are currently being supplied PLC from Lafarge's plants in Richmond, British Columbia, and Bath, Ontario. Product introduction to other provinces will occur as additional testing and updates to local building codes are completed, which is expected to occur by the end of 2012.

With the potential to bring about a 10% reduction in greenhouse gas emissions, the production of PLC at Lafarge's Richmond and Bath cement plants alone is expected to reduce CO₂ emissions by 160,000 tonnes annually, which is equivalent to taking more than 30,000 cars off the road. In addition, concrete containing combinations of PLC and varying levels of supplementary cementing materials (up to 50%) will permit further reductions in the carbon footprint, says the company.

For more information, visit www.lafarge-na.com.

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ACT adds sales engineer

Advanced Concrete Technologies Inc. (ACT) of Greenland, N.H., has announced the hiring of Stephen Nelson as sales engineer. He brings an accomplished background serving in the North American precast and concrete products capital equipment business for more than 15 years, says the company, and is familiar in the efficient layout of concrete plants especially from a machinery point of view.



STEPHEN NELSON

Nelson is responsible for developing sales and the successful installation of Wiggert mixers, Würschum color systems, and complete mixing and batching plants. Most recently, he had been the eastern sales manager for HawkeyePedershaab since they merged in early 2008, and was with Pedershaab since 1996 when it was part of Concrete Technology Integrators (CTI) in Wisconsin.

Nelson and his family will relocate from his home in Green Bay, Wis., to Greenland. An avid fly fisherman, he is also excited to live in an area known for its quality stripers and bluefish fishing.

For more information about ACT, visit www.concretebiz.com.

Shuttlelift launches new series of double-beam gantry cranes

Sturgeon Bay, Wis., Shuttlelift has announced the launch of a newly developed series of double-beam mobile gantry cranes. Its new DB Series was engineered in response to a growing need in the marketplace for cost-effective lifting solutions for consumers needing to lift heavy, bulky items from



SHUTTLELIFT'S DOUBLE-BEAM GANTRY CRANE

production to transport. It provides safe and quick picks, as well as minimizing costly maintenance and down time, says the company.

The DB series completes the Shuttlelift lineup of mobile gantry crane offerings for all markets and applications. It follows the ISL and SL Series product lines, as well as the SB series released last year. Features include precision control, exceptional operator ergonomics, and minimal maintenance and servicing needs. Options include wireless remote control, automatic variable throttle, wireless load read-out, all-wheel electronic steering, or the auxiliary power hoist system.

For more information, visit www.shuttlelift.com.

Tindall announces promotions and new hire

Tindall Corp., a designer, manufacturer and installer of precast, prestressed concrete systems based in Spartanburg, S.C., has announced promotions for Joel A. Sheets and Robert A. Smith Jr. and the hiring of Henry S. Scott.

Joel A. Sheets was promoted to vice president and general manager of the Utilities business. He graduated from Clemson University in 2001 with bachelor's degree in civil engineering and joined Tindall following graduation.

Robert A. "Rob" Smith Jr. was promoted from plant manager

to operations manager for the South Carolina division. He is a 2003 graduate of Virginia Tech with a bachelor's degree in industrial and systems engineering. In his new role, he is responsible for manufacturing operations, field services and project management.

Henry S. "Scott" Boling joined Tindall in July as plant manager for the South Carolina division. He brings more than 34 years of industry experience and, as an Army veteran, brings impressive leadership skills and people development knowledge to the company.

For more information about Tindall Corp., visit www.tindallcorp.com.

Easi-Set buildings certified for UL 752 Level-5 ballistics

Easi-Set Worldwide, based in Midland, Va., has announced that its Easi-Set/Easi-Span Building line successfully passed the UL 752 Level-5 ballistic test.

MGA Research Corp. of Manassas, Va., performed the test using a NATO 7.62x51 mm round fired at the standard 3-in.-thick building wall panel. All four tests in the procedure were successful. Level-5 provides protection for personnel or equipment from many forms of small arms fire.

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Columbia appoints sales director



STEWART LUCKMAN

Columbia Machine Inc., based in Vancouver, Wash., has announced that Stewart Luckman was appointed to a new position as precast sales director. Luckman will focus all his efforts on increasing Columbia Machine's batch plant and mixer sales within the various precast, prestressed and concrete pipe markets.

Luckman has been with Columbia Machine for two years and has brought a wealth of experience to the precast market spending more than 22 years with a competitive concrete batch plant company. He was educated as an electrical engineer and began his career as a service technician in the United Kingdom. In 1993, he moved to the United States

and eventually served in both sales and service functions before transitioning to Columbia.

For more information about Columbia Machine, visit www.columbiemachine.com.

Hyster launches new OrderPicker series

Hyster Co. has launched a new series of AC-powered OrderPickers to meet customers' demanding applications. The upgraded series, with lifting capacities of 1,500 to 3,000 lbs, includes heavy-duty, counterbalanced lift trucks.

For more information about Hyster Co., visit www.hyster.com.



HYSTER'S ORDERPICKER

Nitterhouse Concrete adds to sales team



ALLAN P. PACZEWSKI

Nitterhouse Concrete Products Inc., Chambersburg, Pa., has announced the addition of Allan P. Paczewski as regional sales representative in Virginia and Washington, D.C. He brings extensive knowledge and 30 years of experience in precast concrete products and building systems.

In his new position, Paczewski's main responsibilities include efficient, professional services to new and existing clients within Virginia and Washington, D.C. His services include personal consultation with developers, designers and other construction professionals in the design of precast/prestressed concrete structures, as well as providing direction and recommendations in the application of precast/prestressed concrete products.

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NPCA CALENDAR

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

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| The Precast Show 2012 | Orange County Convention Center – Orlando, Fla. | March 1-3, 2012 |
| NPCA 47th Annual Convention | Ritz-Carlton – New Orleans | Oct. 3-6, 2012 |
| The Precast Show 2013 | Indiana Convention Center – Indianapolis | Jan. 31-Feb. 2, 2013 |
| The Precast Show 2014 | George R. Brown Convention Center – Houston | March 6-8, 2014 |
| The Precast Show 2015 | Orange County Convention Center - Orlando, Fla. | Feb. 5-7, 2015 |

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Already on Facebook? Thinking about joining? If so, we have a page you can follow to get NPCA updates, general precast news, view photos and videos, interact with other members and much more. It's free to join, and a great way to promote your business and interact with others.



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Also a free tool, Twitter allows us to provide continual updates about the precast industry, including links to relevant articles, member news and more. We have built a network of specifiers and others in the concrete industry to help with your company's exposure. Join and follow us/interact today.

A Guide to NPCA Social Media

Where to Connect

Five Reasons to Join the Community

1. Promote your business/improve branding
2. Meet others in the industry
3. Get your message out
4. Stay on top of NPCA/industry news
5. It's free!



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Flickr is a free site where we can post photos that relate to the precast industry. If you have pictures you want to share, send them our way. You can comment on photos we have posted, or simply view the ones you are interested in. All photos are broken up into categories.



YOUTUBE

www.youtube.com/nationalprecast

YouTube is a site where we can post and view videos and watch for free. We will be producing more video in the coming months and years, and every one will be posted on our YouTube "channel." Join today and follow our channel to see our videos and share them with others.



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<http://linkd.in/nationalprecast>

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