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Vol. 16 No. 2 February/March 2016

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# From the Publisher's Desk

**Dear Readers,**

The Joint Center for Housing Studies recently reported that remodeling contractors with revenue of $100,000 or less suffered the highest level of business failures during the Great Recession (71 percent). Companies with annual revenues of $250,000 or more were significantly less likely to fail during that period (43.5 percent). The larger a company's annual revenue, the more likely it was to survive.

During the leanest periods, most companies still in business employed less people than they had pre-recession. In many cases, those surveyed no longer had any payroll and were operating as mom-and-pop companies without employees.

Today, as companies regain confidence with increased workloads, a serious problem has arisen — a workforce shortage. I think this shortage partially stems from the construction industry's shrinking labor pool during the recession. Now that work is back, specialty trades are feeling the repercussions. How do we fix this problem?

I read a magazine article at World of Concrete that addressed one company's continued success despite the labor shortage. It made a few comments I feel are worth noting. First, look nearby for recruitment, such as at your kid's sporting events, because talent may be standing right next to you. Through our conduct, those parents should recognize that your business and industry are a viable career path in life.

Second, we do compete with other industries for talent. We have to build a strong top-shelf public image that's attractive to outsiders, including prospective customers.

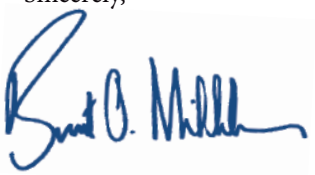
Third, get involved in your community, your church and local business groups. A community college can become a powerful recruitment environment because we don't just offer a job, we offer a career opportunity. Whether you work as a union contractor or otherwise, apprenticeship training is a must. If new recruits don't see a future with your company, you can't expect to attract great talent.

Lastly, think and plan for the long term. Setting goals for growth and making sure they happen will help firm up your business' foundation. Another recession may cause a setback but it won't bury you.

The thing I love most about our industry is its sheer beauty. Man, when things are done right, it is noticeable.

Enjoy this edition of *Concrete Decor.*

Sincerely,



P.S. People are always asking me: How big is this industry? I suggest they visit the Concrete Decor Show this fall in San Diego and see firsthand how this decorative concrete industry inundates Southern California.

**On the cover:** Stealth, the award-winning sculpture that graces Atlanta's Midtown Arts Center, looks like a metal monolith but it's actually made of a special concrete mixture developed by the Swedish-owned Thomas Concrete Group.

Photo courtesy of Thomas Concrete Group

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Stamp photo courtesy of Proline Concrete Tools

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## concrete DECOR® EXPERTS

*For more than 20 years, **Ashley Kizzire** has written for commercial markets, specializing in the concrete and construction industry since 2000. Based in Birmingham, Alabama, Ashley is a content writer and marketing specialist at Constructive Communication Inc. She can be reached at akizzire@constructivecommunication.com. See Ashley's article on page 24.*

***Clif Rawlings,** vice president of key accounts for Ameripolish, has 16+ years of experience and 10+ in training in the concrete polishing, natural stone and terrazzo industry. He advocates for decorative concrete through the CPAA Ethics Committee and educates at trade events such as the Concrete Decor Show and World of Concrete. Reach Clif at crawlings@ameripolish.com. See Clif's article on page 54.*

***David Stephenson** owns Polished Concrete Consultants, based in Dallas, Texas. As a consultant, he offers decorative concrete programs for retailers and troubleshooting for a wide range of clients. Contact him at david@polishedconsultants.com. See David's article on page 58.*

***Chris Sullivan** is vice president of sales and marketing with ChemSystems Inc. He has led seminars and product demonstrations throughout North America. Chris was inducted into the Decorative Concrete Hall of Fame at the 2015 Concrete Decor Show. Reach him at questions@concretedecor.net. See Chris' column, "Concrete Questions," on page 52.*

***Explore our archive at ConcreteDecor.net***

### GreenSurfaceResource.com now open for business

The same company that created www.countertopresource.com has officially launched its new website: www.greensurfaceresource.com. The new website is designed specifically to keep users informed of advancements in the sustainable, eco-friendly, recycled and environmentally conscious surfacing industry.

From materials designed for countertops, flooring and internal or external cladding to materials, processes and ancillary products related to the fabrication, design and installation of these materials, the website covers all things in this growing industry.

The website team has been working on the site in the background for more than a year, and the culmination of those efforts have finally reached a point where the team is ready to show it off to the world. *Concrete Decor* readers are the first to be invited to view the site and offer feedback.

Please check it out. Then let the company know what you think by emailing them at info@greensurfaceresource.com. It would love to hear from you with your opinions — good, bad or ugly.

The company will also launch a quarterly newsletter — The Green Surface Insider — in the coming months, with a fifth special "Best of" issue at the end of the year. To add your name to the email list, subscribe here:

**www.greensurfaceresource.com/email-listnewsletter-sign-up-page**
**www.countertopresource.com**
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# EVENT CALENDAR

### Arkansas Ready Mixed Concrete Association Convention
March 17-19
Hot Springs, Arkansas
**www.concretearkansas.org**

### Concrete Sawing and Drilling Association Convention and Tech Fair
March 8-12
Palm Desert, California
**www.csda.org**

### Portland Cement Association Spring Congress
March 13-15, Chicago, Illinois
**www.cement.org**

### International Concrete Repair Institute Spring Convention
March 16-18
San Juan, Puerto Rico
**www.icri.org**

### 1st International Conference on "Grand Challenges in Construction Materials"
March 17-18
Los Angeles, California
**www.igcmat.com**

### Cement Employers Association "Winter" Meeting
March 29-31, Dallas, Texas
**(610) 868-8060**

### The Masonry Society Spring Meeting
April 6-9, Denver, Colorado
**www.masonrysociety.org**

### National Ready Mixed Concrete Association Annual Convention
April 10-12, San Diego, California
**www.nrmca.org**

### American Coatings Show and Conference
April 11-14, Indianapolis, Indiana
**www.paint.org**

### American Concrete Institute Spring Convention
April 17-21
Milwaukee, Wisconsin
**www.concrete.org**

## Floor coatings market forecast to grow

The North American concrete floor coatings market is expected to reach $546.8 million by 2023, a new forecast suggests. Transparency Market Research says the market, which was valued at $325 million in 2014, will grow at a compound annual growth rate of 6.0 percent from 2015 through 2023. The report also includes details on other product segments including acrylics and polyurethanes.

The firm forecasts that the recovering construction industry in the U.S. and growing infrastructure investments in Mexico will drive demand for the materials. Concrete floor coatings play a pivotal role in protecting concrete floors in various construction applications, according to the market research firm. These coatings are extensively used in both indoor and outdoor applications to protect concrete floors from abrasion, chemical attacks and thermal shock.

Demand for concrete floor coatings in North America is also being driven by increasing awareness regarding importance of floor coatings. Furthermore, implementation of the National Infrastructure Plan by the Mexican government is anticipated to boost demand for concrete floor coatings in Mexico during the forecast period, the firm notes.

Volatility in supply and price of raw materials used to produce concrete floor coatings is expected to be a key challenge for market players, the firm suggests.

In terms of demand, epoxy-based concrete floor coatings were the dominant product segment in North America, accounting for more than a 55 percent share in 2014. Demand for epoxy-based concrete floor coatings is expected to witness robust growth in the near future, particularly in Mexico, due to its easy availability and low cost.

Rapid curing rate, better wear and tear resistance, and better UV protection and high abrasion resistance offered by polyaspartic coatings are expected to be primary factors fueling demand for polyaspartic-based concrete floor coatings, according to the market research firm.

"Concrete Floor Coatings (Epoxy, Polyaspartics and Others) Market for Outdoor and Indoor Applications — North America Industry Analysis, Size, Share, Growth, Trends and Forecast 2015-2023" is available for purchase.

**www.transparencymarketresearch.com/north-america-concrete-floor-coatings-market.html**

# TRANSITIONS

**Harry Price** has been promoted to EDCO's East Coast regional sales manager and will now oversee the territories of New England, the mid-Atlantic, the Southeast and Florida. Contact him at (443) 829-4719 or hprice4edco@verizon.net.

**Derek Olson** has been named president of National Equipment, a provider of floor prep equipment in Colorado since 1968. Only the third president in the company's history, Olson will forge a new training center in the Denver metro area, which expects to have more than 30 training programs in 2016.

**Christopher J. Darnell** has been promoted to managing director of customer and product strategy for the American Concrete Institute. He will focus efforts on improving member and customer experiences by aligning ACI products and services with user expectations, market demand and communication channels. Email chris.darnell@concrete.org or call (248) 848-3174.

**Nick Adams** has been promoted to vice president of segment sales for The Euclid Chemical Co. **Warren McPherson** will transition to manager of high performance flooring systems. Both join the Key Account Group, which cultivates and manages agreements with key, national admixture and construction products accounts.

W.R. Grace & Co. has named **Adam Grose** president of its Specialty Construction Chemicals of GCP Applied Technologies Inc., the Cambridge, Massachusetts-based public company formed by the spin-off in early 2016 of Grace's Construction Products segment and its Darex Packaging Technologies business. Grose will lead GCP's Specialty Construction Chemicals business, which provides products, technologies and services to the concrete and cement markets globally.

**John Partridge** has been appointed Eastern sales manager and **Brent Green** Western sales manager for Lackmond Products Inc., a leading supplier of diamond tools, carbide tools and equipment. Partridge joined Lackmond in 2013 as the Northeastern regional sales manager and Green joined in 2008 as a regional sales manager.

**Todd Duewel** has been promoted to regional sales manager for W.R. Meadows and will lead the sales efforts of the Hampshire, Illinois, and York, Pennsylvania, branches. He previously held the position of sales manager for the Hampshire office.

**Doug Metchick** has been named president of Laticrete Supercap LLC. He will work from Laticrete world headquarters in Bethany, Connecticut.

**Eva O'Keefe** has been promoted to vice president of strategic accounts and **Jay Umphrey** to vice president of key accounts of Horn, a North American distributor of specialty ingredients, chemicals and raw materials. They joined the Horn coatings and building materials team in 2010 and have since become top producers for the company's largest business unit. **Yvette Altuna** has been hired as senior credit manager to oversee the company's credit department. She joins Horn with 18 years of experience managing credit departments in the chemical distribution industry.

## Atlas Copco launches revamped Dynapac website

Atlas Copco Construction Equipment launched its redesigned road construction equipment website, Dynapac.com. The new site gives contractors and dealers an easily navigable, one-stop source for information and support for its complete line of compaction and paving equipment. In addition to browsing product information, visitors can complete a wide range of tasks, from finding used equipment and training materials to ordering brochures, manuals and parts.

Dynapac.com gives users access to Atlas Copco's Construction App and Shop Online system. Atlas Copco's Construction App combines social media content, product information and videos to view anytime, anywhere. The app works with Apple and Android devices. The Shop Online program is a one-stop shop for contractors, dealers and rental center managers to place and track parts orders. They can also use Shop Online to look up product information and manuals.

Contractors and dealers can view the latest equipment, find parts and service kit information and watch product videos as well as compare different models. Users also can stay informed on the latest company news and product releases as well as access Atlas Copco's Build Magazine.

The site gives visitors a basic understanding of asphalt paving and milling as well as soil compaction, and it explains the general requirements for building airfields, canals, dams, foundations, highways and railroads. Dealers and contractors also can access a variety of marketing information on the redesigned website.

**www.atlascopco.us**

**www.dynapac.com**

## Lackmond Products acquires DTS

Lackmond Products Inc., a leading supplier of diamond tools, carbide tools and equipment, and parent company of Lackmond Stone, has acquired Diamond Tooling Solutions of Royalton, Minnesota.

DTS, founded in 2010, has product lines that consist of Tyrolit CNC Tooling, Nemi Vacuum Pods, and other tools and supplies for the stone fabricator. Its ability to offer support and application solutions to automated fabrication shops has made them a valuable resource to the stone fabricator.

**(800) 850-2044**

**www.lackmond.com**

## Smooth-On expands to larger facility

Smooth-On Inc., a leading manufacturer of silicone rubbers, polyurethane rubbers and plastics, rigid and flexible urethane foams, epoxies, polysulfide rubbers, adhesives, coatings, release agents and other material technologies, opened a new production facility in Macungie, Pennsylvania. Established in 1895, the company has only moved its operations three times in its 120-year history.

Formerly occupying 80,000 square feet on 8 acres in Easton, Pennsylvania, Smooth-On now has a new 370,000-square-foot building on a 30-acre campus that contains new and fully equipped production, warehouse, lab, training and office areas.

**(800) 762-0744**

**www.smooth-on.com**

## Wooster Brush Co. celebrates 165 years

In 2016, The Wooster Brush Co. celebrates 165 years of being a leading manufacturer in the paint applicator industry.

Established in 1851 by Adam Foss, Wooster Brush started out with him selling handmade brushes door to door in Wooster, Ohio, where the company's headquarters are still located today. Now in 2016, Wooster Brush encompasses more than 888,000 square feet of manufacturing, shipping, administrative and warehousing facilities and employs 550 people.

Each year, Wooster designs thoughtful new products for professional and DIY painters. More than 200 SKUs have been added to Wooster's catalog since 2011.

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## Industrial Finishes & Systems partners with HCT

Industrial Finishes & Systems Inc. has entered into an exclusive national distribution agreement with Hybrid Coating Technologies for several of HCT's coating formulations. HCT has developed Green Polyurethane, the first-ever modified hybrid polyurethane (currently used in coatings and paint) made without using isocyanates.

The result is True Green Poly, a substitute for conventional polyurethane and epoxies that's hundreds of times less toxic, has superior properties and may provide up to 30 percent to 60 percent reduced application costs. True Green Poly featuring Green Polyurethane is the first and only commercially available zero-isocyanate hybrid polyurethane coating.

The product emits such low odor that it can be applied in environments that make conventional toxic, isocyanate-based polyurethane coatings difficult to use, such as hospitals and schools. It's also perfect for new construction and recondition projects with "green" considerations or seeking LEED certification.

Recently, Green Polyurethane was the recipient of the prestigious 2015 Presidential Green Chemistry Challenge Award given by the U.S. Environmental Protection Agency in cooperation with the American Chemical Society. The award program, supported by the White House Office of Science and Technology Policy, recognizes "landmark green chemistry technologies developed by industrial pioneers and leading scientists in the field of green chemistry."

Since 1958, Industrial Finishes & Systems has remained one of the nation's leading distributors of paint, equipment and supplies. Headquartered in Eugene, Oregon, the company serves customers in the automotive, recreational vehicle, aerospace, military, marine and industrial/panel markets through a nationwide network of more than 20 distribution centers.

HCT is a San Francisco-based innovator focused on improving the quality and safety of foams, coatings and adhesives for industrial and commercial customers around the world. It is the exclusive licensee of Green Polyurethane foam, coatings and adhesives.

**www.hybridcoatingtech.com**
**www.industrialfinishes.com**

## Search for certified operators through ACPA; take safety webinar online

The American Concrete Pumping Association now offers an online certified operator search. With new ASME B.30 standards in place, verifying ACPA-certified operators is more important than ever before. To assist the industry with this important task, ACPA has added a search function to its website, enabling users to search and verify operator certification.

Information required to complete a search includes the operator's last name and operator number, which is the last four digits of his or her Social Security number. Neither personal information nor company name is revealed through the search.

Easy to use, the search identifies the areas in which the operator holds certification and whether the certification is current or expired. Obtaining search results helps companies meet the ASME standard requiring a pumping company to have third-party written assessment of the pumper's knowledge on safety.

In addition, an Operator Evaluation Form for ACPA members is now available online to help evaluate a person's capability in operating a concrete pump. Found on the ACPA website in the members-only login section, the form can be downloaded, customized with company name and printed. The checklist-style form allows companies to meet the ASME B.30 standard requiring every pumping company to have at least one operational evaluation per operator and as needed.

In other news, ACPA, in conjunction with its insurance provider NBIS Inc., now offers a webinar to help concrete pumpers, contractors and ready-mixed companies navigate the American Society of Mechanical Engineers' new safety standard. Titled "An Introduction to ASME B30.27-2014 with Responsibilities Delineation," the webinar is hosted by Robert Edwards of NBIS and enables participants to understand their responsibilities as well as the responsibilities of others on a concrete pour.

The webinar will benefit any contractor who works with concrete pumpers.

The B30.27 standard went into effect last March, after years of evaluation and industry input. It was created to prevent or minimize injury to workers by prescribing safety requirements and outlines the standard for jobsite responsibilities for concrete material placing systems.

The digital version doesn't allow printing or sharing with other computers. Hard copies can be purchased through ACPA's website.

The ACPA is a nonprofit association which serves as an advocate for the concrete pumping industry committed to promotion, education and safety for its members.

**www.concretepumpers.com**

## PCA celebrates turning 100

In 2016, the Portland Cement Association is celebrating its centennial year. During the last 100 years, PCA has become widely recognized as the authority on the technology, economics and applications of cement and concrete.

The anniversary marks an occasion to not only celebrate the association, but where the industry has come and where it is heading into the next century. Many of the roads and buildings promoted a century ago not only still exist, but remain in active use.

This is not just a testament to the resiliency of concrete, but also its role as a building block of society. Without concrete our homes, roads, schools and cities would not exist as they are today.

The year will be filled with many events, a video series, and speeches honoring the past, present and future. PCA's Spring Congress, held March 14-15 in Chicago, Illinois, will feature a dinner at the Blackstone Hotel in the room where cement industry leaders gathered in 1916 to form the association. Also on the agenda are open houses at the Skokie and Washington, D.C., offices.

**www.cement.org**

## Acme Tools is Google Trusted Store

Acme Tools, a leading authorized online retailer of tools and equipment, was recently selected to join the Google Trusted Stores program. To help shoppers identify online merchants that offer a great shopping experience, the Google Trusted Store badge is awarded to e-commerce sites that demonstrate a track record of on-time shipping and excellent customer service. When visiting the Acme Tools website, shoppers will see a Google Trusted Store badge and can click on it for more information.

Acme Tools also announced an upgrade to its navigation and search feature incorporating new industry-leading technology designed to provide faster and more relevant search results for

online customers. The new search engine technology delivers a site search solution that produces relevant product recommendations, making it faster and easier for online shoppers using the site search feature.

As an added benefit, when shoppers make a purchase at a Google Trusted Store, they have the option to select free purchase protection from Google. If they have an issue with their purchase, they can request Google's help, and Google will work with Acme Tools and the customers to address the issue. As part of this, Google offers up to $1,000 lifetime purchase protection for eligible purchases.

Google Trusted Stores is entirely free, both for shoppers and for online stores.

With more than 65 years of industry experience, Acme Tools is a multichannel premier retailer of tools and equipment with 10 retail stores in North Dakota, Minnesota and Iowa. It also is a leading online retailer offering more than 30,000 products online at AcmeTools.com.

**(612) 998-1475**

**www.acmetools.com**

## Concrete Conference 2015 held in Dubai

Concrete Conference 2015, part of an educational campaign launched by MEVA Formwork Systems in cooperation with the American Concrete Institute, was held Nov. 23 in Burj Khalifa, Dubai. Its aim was to reach an international professional audience on the new ACI publication, "Guide to Formed Concrete Surfaces (347.3R-13)," which clearly defines the features of formed concrete surfaces.

About 80 guests from around the world met to hear keynote speaker Rolf Spahr, who spearheaded the guide and was honored as one of the five most influential persons in the concrete construction industry in the U.S.

In his address, Spahr elaborated on the international context of formed concrete surfaces, the developments in the concrete industry and the history of concrete as a building material. He also explained the interrelations between German, Austrian, British and American approaches and explained how the new guide came about. His explanation of the implications for the developer, architect, engineer and concrete contractor was a main focus.

**www.meva-international.com**

## Deco-Pour expands service area with acquisition on East Coast

Deco-Pour recently expanded its manufacturing and warehousing with the acquisition of Silpro LLC in Ayer, Massachusetts. This change dramatically improves material delivery times for projects and customers on the East Coast of the U.S. and Canada. With this new logistics piece in place, Deco-Pour will move forward with plans to launch an advanced training and certification program in the polished overlayment industry. Silpro is a leading manufacturer of floor preparation, concrete and masonry restoration products.

Deco-Pour, one of the first available polished overlayments, was developed and patented by Jim Harvey in 2001 to address inconsistencies and limitations associated with polished concrete. Company studios and training facilities are based just outside Seattle in Snohomish, Washington.

**(360) 668-2218 (Deco-Pour)**

**(800) 343-1501 (Silpro)**

**www.decopour.com**

**www.silpro.com**

## DSSG offers AIA continuing ed course

"The Architectural Concrete Surfaces Today: Decorative Flooring, Artistic Hardscapes and Innovative Design Options," a course for architects offered by the Decorative Surface Solutions Group, will explore the many applications of decorative concrete finishes for interior and exterior use.

The program covers all of the design options available and outlines the proper solutions for differing surface requirements and environments. Coursework will cover finishing techniques, systems and materials, while also considering benefits compared to alternative solutions as well as caveats and lessons learned.

Participants will learn about environmental and project planning impacts of various concrete solutions and safety assurances. The course will look at examples demonstrating the versatility in colors, textures, aggregate exposure, levels of diamond polishing, decorative inlays, architectural saw cuts and multiple solutions in providing graphic etching and design in concrete surfaces.

After completion of this course, participants will be able to select decorative concrete systems and solutions for interior versus exterior application, specify the proper decorative concrete finish techniques and use, assess general costs and impacts of architectural concrete solutions and define the benefits of using concrete over other flooring/paving options.

"This new course will be taught by DSSG contractor members that go through our instructor training course and demonstrate they can deliver the course up to AIA standards," said Curt Thompson, DSSG CEO. "This course and other courses to follow will be available as tools our members can use to help educate the market on the latest materials, technologies and methods to deliver high-quality decorative flooring solutions to the market."

DSSG, headquartered in Livermore, California, is dedicated to increasing the sales and profits of its members specializing in hard surface solutions such as polished concrete, concrete topping slabs, epoxies, terrazzo and other alternative flooring options both inside and out. It connects manufacturers, contractors and products in each category to accelerate the overall growth of this relatively new industry segment while positively impacting its members and supply partners. Email Thompson at ct@dssgteam.com for more information.

(925) 964-6377

www.decorativesurfacesolutions.com

## NCMA announces board election results

The Associate Member Division Board elections for the National Concrete Masonry Association are complete. Congratulations to the following individuals on their newly elected positions to the AMD board for four-year terms: Jose R. Diaz, MASA – USA; Larry Hilldore, Pathfinder Systems/Tiger; Todd Holyfield, Huntsman Pigments and Additives; and Richard Isaacson, iwi group.

Terms began at the end of the 2016 NCMA Annual Convention in February. In addition, Brian Price with Rockwood Retaining Walls will fill the unexpired term of Brian Carney of Spec Mix.

www.ncma.org

## ACPA elects new board members

The American Concrete Pumping Association recently elected new board members for regions 2, 4 and 6. Re-elected members include Gary Brown, region 2 director, and Tony Inglese, region 4. New to the ACPA board is Chris Pernicano, region 6 director.

Brown has more than 37 years in the concrete pumping industry, with the last 22 years expanding the concrete pumping division at R.L. McCoy Inc. He previously served on the ACPA board and received the Pioneer Award in 2007. Inglese is the general manager of Enviro-Systems Inc. and a member of the administrative staff at Pioneer Concrete Pumping Service in Atlanta. He currently serves as vice president of the association and chairman of the Membership Committee.

With more than 30 years of concrete-pumping experience, Pernicano is the owner and chief operating officer of San Diego Concrete Pumping Inc., as well as president and CEO of Pernicano's Concrete Pumping Inc. In addition, he owns Used Concrete Equipment Co. and is an authorized Schwing line pump dealer in Southern California.

Regional board members took office at the ACPA annual meeting in February and are elected to serve a two-year term.

www.concretepumpers.com

## North American precast concrete industry issues Environmental Product Declarations

The North American precast concrete industry has released Environmental Product Declarations in three key precast concrete product categories. The EPDs allow architects, engineers, building owners and other specifiers to better understand the environmental impacts of precast and prestressed concrete products.

The precast concrete industry-wide EPDs are now available for the following products: architectural and insulated wall panels, structural precast concrete products and underground precast concrete products.

An EPD is a standardized, internationally recognized, comprehensive tool for providing information on a product's environmental impact. Information in the EPD documents is based on an ISO-compliant Life Cycle Assessment and verified by a third-party. The detailed analysis considers all processes in the manufacturing of a product, including raw material and energy extraction, preliminary production and the manufacture of end products.

The industry-wide EPDs, jointly released by the Canadian Precast/Prestressed Concrete Institute (CPCI), the National Precast Concrete Association (NPCA) and the Precast/Prestressed Concrete Institute (PCI), are issued within clearly defined product groups based on the precast concrete Product Category Rules (PCR). Using products with EPDs can contribute to LEED credits. LEED v4 has incorporated a new credit for EPDs that have been third-party verified by an approved program operator.

The EPDs were independently prepared by Athena Sustainable Materials Institute in accordance with ISO 14025 and ISO 21930; the PCRs for Preparing an Environmental Product Declaration for Precast Concrete (UN CPC 3755), March 2015; and ASTM international's EPD program operator rules. They were also independently verified by ASTM International (in accordance with ISO 14025) and by Industrial Ecology Consultants (in accordance with ISO 14025 and the PCRs).

CPCI, NPCA and PCI provide the leading body of knowledge (BOK) for the precast concrete industry in North America. From this BOK, building codes, design guides, educational programs, certification, sustainability programs and new research ideas are derived. This joint industry initiative develops, maintains and disseminates the BOK necessary for designing, fabricating, and constructing sustainable and resilient precast concrete structures.

Founded in 1954, PCI is the technical institute for the precast concrete structures industry. PCI develops, maintains and disseminates the body of knowledge for designing, fabricating and constructing precast concrete structures. PCI provides technical resources, certification for companies and individuals, continuing education, as well as conducts research and development projects, conventions, conferences, awards programs and much more.

CPCI is a national organization whose purpose is to advance the design, manufacture and use of structural, architectural and specialty precast/prestressed concrete in Canada.

NPCA represents manufacturers of plant-produced precast concrete products and the suppliers of products and services for the industry. Founded in 1965, NPCA currently represents members across the U.S., as well as in Canada, Mexico and throughout the world.

- **www.cagbc.org and www.usgbc.org (information on LEED credits) www.pci.org/Design_Resources/Environmental_Product_Declarations**
- **www.cpci.ca (Canadian Precast/Prestressed Concrete Institute)**
- **www.pci.org (Precast/Prestressed Concrete Institute)**
- **www.precast.org (National Precast Concrete Association)**

## Construction poised for strong growth

With an improving economic outlook and more available cash on hand, construction businesses will continue their expansion plans, thereby bolstering overall building activity. Swelling demand for new health care and educational facilities, offices, hotels and retail stores is projected to strengthen construction activity in the commercial building market. IBISWorld has made the full data available in its media center.

As a result of this surge in demand, prices for a number of construction services are projected to increase rapidly. For example, the price of plastering and drywall services, which are widely used in commercial and construction projects, is forecast to jump 7.7 percent in 2016, according to IBISWorld. Similarly, prices for painting services and landscape architecture and design services are anticipated to increase 5.9 percent and 3.4 percent respectively in 2016.

In addition to skyrocketing demand, higher prices for raw inputs such as gypsum building materials, coatings and paint will further propel price growth for construction services as suppliers seek to compensate for heightened purchase costs.

While buyers cannot completely avoid future price hikes, they can reevaluate their purchasing strategies to maximize cost savings. In fragmented markets with high competition, buyers can pit suppliers against one another by sourcing multiple bids, including blind bids, to elicit more competitive prices. In order to lock in lower prices, buyers should consider purchasing these services sooner rather than later or entering into contract agreements.

**(310) 866-5033**

**www.ibisworld.com**

## ASCC forms a mentoring program

The Emerging Leaders Committee of the American Society of Concrete Contractors in St. Louis, Missouri, has initiated a mentoring program for its contractor and associate members that unites seasoned concrete construction professionals with members of lesser experience.

The free program is open to all ASCC contractor and associate members. Mentors are selected for their proficiency in a variety of disciplines, such as tilt-up, super-flat floors, decorative concrete, industrial construction, business management and field operations.

"This program directly supports ASCC's mission to 'enhance the capabilities of those who build with concrete,'" says Matt Poppoff, co-chair of the EL committee.

Members of the nonprofit organization include concrete contracting firms, manufacturers, suppliers and others interested in the concrete industry such as architects, engineers and specifiers. There are approximately 550 member companies in the U.S. and 12 foreign countries.

**(866) 788-2722**

**www.ascconline.org**

## Wagner Meters' online app estimates relative humidity

Wagner Meters recently released an online Service Temperature Estimator webApp that easily and quickly estimates the relative humidity (RH) at service conditions from concrete at nonservice conditions.

Now, flooring experts and general contractors can access vital information to help determine realistic project deadlines and ensure compliance with the ASTM F2170 standard for concrete slab RH measurements. More importantly, properly conducted RH measurements will decrease the risk of moisture-related flooring problems, costly delays, callbacks and even lawsuits. The Service Temperature Estimator webApp, via a licensing agreement with the CTLGroup, is now available for all Wagner Meters customers.

You only need four things to estimate the expected in-situ RH at service conditions when using the Service Temperature Estimator webApp: online access, the cement-to-water ratio, the in-situ RH measurements of the concrete, and the current nonservice condition concrete slab temperature.

Estimating the expected RH at service conditions with the Service Temperature Estimator webApp is quite simple:

1. Visit http://www.wagnermeters.com/RhEstimator/.

2. Enter the target service condition temperature, set the water-to-cement ratio, enter the measured nonservice condition RH and enter the nonservice condition slab temperature.

3. Click calculate and instantly see the corrected, or estimated, service condition RH.

Getting this early estimate of the floor's moisture condition, along with conducting the RH testing in compliance with the ASTM F2170 standard, will help ensure the success of each project and decrease the risk of moisture-related flooring failures. Such failures, according to the Portland Cement Association, result in millions of dollars in damage annually to buildings in the U.S.

Wagner Meters emphasizes that the Service Temperature Estimator webApp is for estimation purposes only. Before installation of a finished floor on concrete slabs, the ASTM F2170 standard mandates a service condition RH test. The acceptable level of RH is dependent on the flooring product and determined by the manufacturer. For more information, visit www.RapidRH.com.

**(541) 582-0541**

**www.wagnermeters.com**

## Ardex Academy training classes open for registration across North America

Ardex Americas has opened registration for nearly 200 hands-on training classes available free at eight locations across North America. Training is offered in English or Spanish with the language noted on the schedule.

In response to industry trends, the two-day "Underlayments & Toppings" seminar is now a one-day "Underlayments" seminar. "Toppings" has been added to "Designer Floors" and is now a one-day "Designer Floors/Toppings" seminar. "Ardex Polished Concrete Systems" is being partnered with "Designer Floors" and has been renamed "Introduction to Ardex Polished Concrete Systems and Designer Floors" to better reflect the seminar content.

Seminars are available for:

- Ardex Underlayments
- Ardex MC Moisture Control Systems
- Ardex Designer Floors/Toppings
- Introduction to Ardex Polished Concrete Systems and Designer Floors
- Ardiflo Pumping Systems
- Ardex Tile & Stone Installation Systems
- Ardex Engineered Concrete Repair Systems
- SystemOne

Class size is limited and there is no fee to attend. Ardex provides hotel accommodations, some meals and ground transportation. The most current schedule is posted and regularly updated on the Ardex Americas website.

**(888) 512-7339**

**www.ardexamericas.com**

## FCICA announces winners of CIM Newbrough memorial scholarship

FCICA, the Flooring Contractors Association, in cooperation with Ardex America and nora systems Inc., has announced the winners of the first Bruce Newbrough Memorial Certified Installation Manager (CIM) Program Scholarship. One scholarship is awarded each quarter.

Rich Harter, installation supervisor from St. Paul Linoleum and Carpet Co.; Robert Lucio, tile superintendent from Walter Daniels Construction; Stephen Ruggeri, owner of Steve's Carpets; and Ernie Nogales were awarded the inaugural Bruce Newbrough Memorial Scholarship for the CIM program. As winners of this scholarship, each recipient will receive a fully paid tuition in the CIM program compliments of Ardex and nora systems.

The Bruce Newbrough Memorial Scholarship was established to provide educational opportunities to floor covering installation managers who have demonstrated exceptional commitment to and excellence in proper substrate preparation and installation of floor covering.

Bruce Newbrough, as Ardex's director of technical services and later applications development, tirelessly used every opportunity to further his vision and passion for industry education and training on proper substrate preparation, all for the purpose of achieving successful installations.

Individuals interested in applying for the scholarship can visit www.fcica.com/training-program/bruce-newbrough-scholarship to download the application.

The CIM program provides industry-specific training modules led by experts. The program is completely online, allowing users to work at their own pace, on their own time.

FCICA, headquartered in West Bloomfield, Michigan, is an international association organized to provide a unique network for problem solving, education and support, to enhance its members' businesses and the flooring industry. FCICA currently has members in 34 states plus Burma, Guam and Canada.

**(248) 661-5015**

**www.fcica.com**

## Engrave-A-Crete streamlines decorative concrete training

Engrave-A-Crete's all new Decorative Concrete Hands-On Workshop is designed for the seasoned professional as well as those just starting out in the decorative concrete business.

The jam-packed, three-day workshop covers basic and advanced project planning and design, floor prep, correct and creative stain applications, various methods of engraving patterns into concrete, sealer choice and application, overlays, and pricing and marketing jobs.

Participants get extensive experience with Engrave-A-Crete tools, products and processes with no high-pressure sales pitches. Engrave-A-Crete provides a solid decorative concrete curriculum coupled with small group, hands-on instruction by experts in the field. Education does not end with the workshop. Participants receive continuing education through outstanding tech support at no charge.

Classes are held in Engrave-A-Crete's 85,000-square-foot manufacturing and training facility in Mansfield, Missouri. Training dates and detailed workshop information can be found on the website.

**(800) 884-2114**

**www.engraveacrete.com**

# Black Magic

## New sculpture adds Stealth to art center in Atlanta

The new 33-foot-high sculpture in Atlanta, Georgia's Midtown Arts Center looks like a metal monolith with sharp edges and stunning curves, but it's not. At nearly 100 tons, Stealth is fashioned from 52 cubic yards of a concrete mixture developed especially for the project by the Thomas Concrete Group, a Swedish family-owned company with dealings in the U.S. The striking sculpture was unveiled in November.

The concrete contains black sand from a special limestone with iron oxide and carbon pigments, and a synthetic macro fiber reinforcement. After casting, the sculpture was diamond honed to remove imperfections and wet polished to achieve a reflective blue-black finish that gleams like steel. Besides the concrete's rich black color, it was formulated to be super strong, highly crack resistant and able to flow into the formwork's sharply angled shapes.

More than two years in the making, Stealth envelops 8 tons of steel reinforcing bars. Each one of these was cut by hand and individually placed in position with extreme precision.

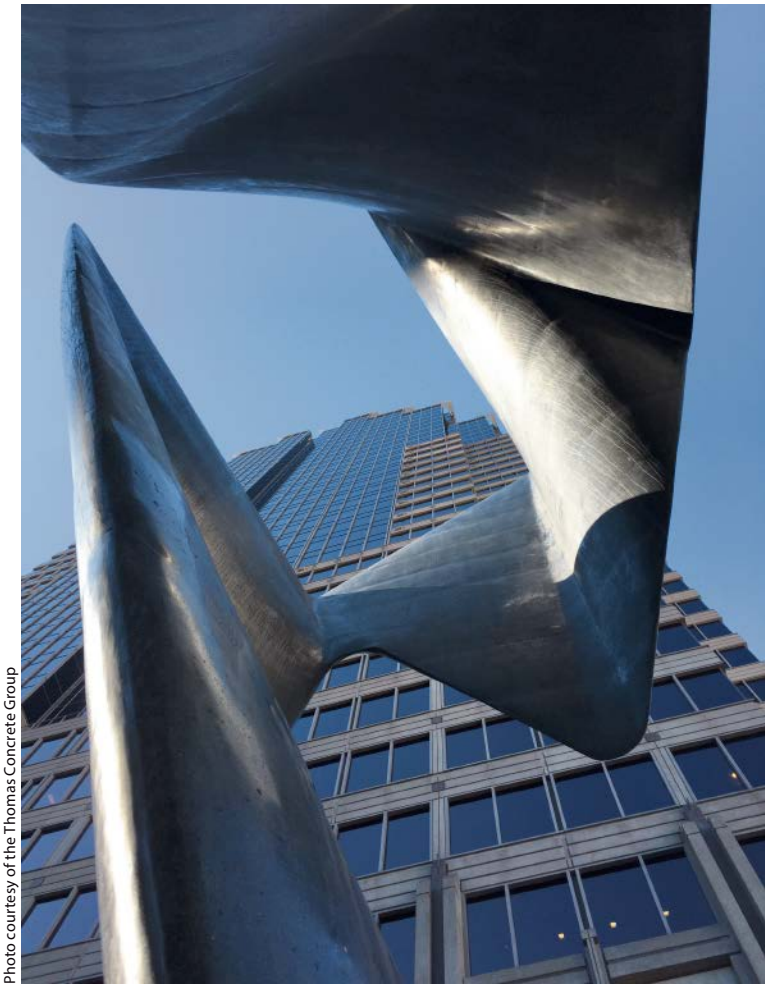


Photo courtesy of the Thomas Concrete Group


Stealth was designed by artist and architect Tristan Al-Haddad, the owner of Formation Studios and an assistant professor at the School of Architecture at Georgia Tech. Jim Case of Uzun and Case was the structural engineer and Sinclair Construction Group was the concrete contractor.

Al-Haddad and his team of 11 at Formation Studios first made a 3-D parametric model before constructing a complex formwork. The sculpture was cast by using a hybrid of digital manufacturing technologies and some old-fashioned quality craftsmanship.

Thomas Concrete Group's headquarters and development center are in Gothenburg, Sweden. The Group manufactures concrete products in Sweden, Germany, Poland and the U.S.

**(770) 438-6980**

**www.thomasconcretegroup.com**

*EDITOR'S NOTE: This sculpture was an award winner in the eighth annual Decorative Concrete Awards competition sponsored by the Decorative Concrete Council, a specialty council of the American Society of Concrete Contractors. See the entire list of winners in the upcoming April issue of* Concrete Decor.

## Multipurpose flooring machine puts a new spin on polished concrete

The Refresher, a new propane-powered multipurpose polishing and stripping machine from Aztec Products Inc., is a polisher, stripper, burnisher and sander all rolled into one environmentally friendly piece of equipment.

The stainless-steel four-in-one machine is designed to be used for terrazzo and concrete polishing, as well as routine maintenance. With its dust control capability and sealed planetary drive with positive drive synchronous belt, the Refresher comes with three sets of quick-change heads: one set of three strip brushes for removing old floor finish; one set of three Velcro drivers for resin bond, hybrid and ceramic diamonds; and one set of three Mighty-Lok drivers for 10-inch burnishing or diamond pads.

Aztec Products, a family-owned business, manufactures all of its products in its Philadelphia-area factory.

**(800) 331-1423**

**www.aztecproducts.com**

## Cove kits and colorants quicken work pace

Florock Polymer Flooring, manufactured in Chicago by Crawford Laboratories Inc. since 1952, has launched the most recent additions to its FloroCrete Cementitious Urethane family of products — FloroCrete Cove Kits and the FloroCrete Powdered Colorant line.

The cove kits allow certified contractors to create sanitary integral floor-to-wall cove bases for their FloroCrete flooring faster than ever. New powdered colorants allow for quick jobsite tinting, enabling installers to easily accommodate any last-minute requests on site. In addition, contractors can now warehouse a broad palette of standard FloroCrete colors in a relatively small space by stocking neutral-colored urethane mortar resin and various shades of the powdered colorants.

Prior to cove kits, installers had to measure resins, thickeners and aggregates to make the cove bases. The kits contain premeasured liquids and aggregates to build 21 linear feet of 6-inch-high cove or 31 1/4 linear feet of 4-inch-high cove.

The powdered colorants, available in bags of red, blue, green, gray and black, make tinting neutral FloroCrete as simple as adding one bag to one kit of cementitious urethane flooring and mixing. The original factory-pigmented gray, tile red and neutral resins are still available.

**(800) 356-7625**

**www.florock.net**

## Colorfast choices expand

Colorfast from Duraamen, a ready-to-use, finely ground blend of synthetic iron oxide pigments and admixtures, are more colorful than ever. Designed to integrally color cementitious overlays, micro-toppings, skim coats or countertop mixes, they are now available in 34 pigments that can be mixed with a gray or white base to create a total of 68 colors. The color chart is available as a PDF at http://www.duraamen.com/site_media/media/product_files/colorfast-colorchart-web.pdf.

Colorfast colors are UV resistant and can be used on interior and exterior surfaces. The powdered colors can be used to create a marbleized appearance.

Among the newer colors added are varying shades of gray, which are extremely popular among many of today's customers.

**(866) 835-6595**

**www.duraamen.com**

## Cost-effective coating controls moisture and pH

Specified Surfaces, in collaboration with Mapei Americas, recently launched Planiseal ESP (Encapsulator, Sealer and pH blocker), a water-based, single-component coating. It dramatically reduces surface preparation requirements and the associated costs to bring high moisture and pH slabs into compliance for floor covering installation.

"With the introduction of Mapei Planiseal ESP we are eliminating the need for shot blasting and other time- and cost-consuming mechanical surface profiling processes associated with ASTM F3010-13 products and requirements," said James Longo, national account manager for Specified Surfaces. "ESP will handle most typical moisture-related project challenges, offering the floor covering installer a value-engineered means to specification compliance with the ability to deliver clients a warrantable installation."

Designed to cost-effectively manage moisture and alkalinity, Planiseal ESP will be distributed exclusively by Specified Surfaces. "Traditionally, moisture mitigation has been an all or nothing process that includes shot blasting, epoxies and cementitious materials at an installed cost of three or four times that of employing Planiseal ESP," Longo said.

"While the 3010-13 products definitely have their place, Planiseal ESP will offer significant cost savings by allowing direct application of standard water-based glues without the use of primers, patches, skims or levelers over the moisture control coating . . . giving floor covering installers greater control of costs, schedule and application."

After their successful collaboration launching Planiseal MVR in 2010 through an exclusive distribution model, Mapei and Specified Surfaces have jointly developed Planiseal ESP to go to market using the same model.

Founded in 1997, Specified Surfaces has distributed more than 20 million square feet of warranted moisture control systems to commercial contractors on projects in the U.S. and abroad. Focusing primarily on institutional and commercial applications, Specified Surfaces works closely with architects and owners to develop warranted solutions to challenging flooring-related design-build issues.

**(866) 250-3624**

**www.specifiedsurfaces.com**

## Composite pads engineered for power trowels

Prodiacc pads, a poly-reinforced orbital diamond cushion composite, are specifically engineered for use with Wagman Metal Product Inc.'s patented Wagman Revolution GHP System on power trowels. The high-performance design promotes long wear life and diamond efficiency.

Productivity increases dramatically over traditional methods due to the "passive planetary" action of the patented rotary system. This next generation composite pad simplifies the process of grinding, honing and polishing concrete and reduces maintenance labor with fewer pad changes with no loose or broken pucks to fix. The multiple diamond matrix per pad allows for fast grit level changes, thus reducing labor costs even more.

Prodiacc pads complement the rotary system for a fast, efficient way to process concrete. Learn more by watching this video: https://youtu.be/pcliElPg4wo.

A power trowel with the Wagman Revolution GHP System fitted with Prodiacc pads can now be effectively used for grinding, honing and polishing concrete. The product attaches to trowel arms like trowel blades, and boasts a passive planetary action and sealed bearing mount to provide a freely spinning rotary. A pivot-bearing design allows the rotary to "float" on the surface and follow the floor profile. A specialized rotary driver and abrasive grits are available in a grit range of 30 to 3,000. The attachments, which fit popular power trowels, use operator-familiar equipment.

**(717) 854-2120**

**www.wagmanmetal.com**

## 'Kit' program saves companies time, money

Dynamic Systems Inc., a Redmond, Washington, software developer specializing in data collection applications, now has a new kitting program for the construction and restoration industry based on using bar code technology.

The Kitting Manager, targeted for companies who need to reduce the loss of tools and save time tracking down equipment, allows individually separate but related classes of items to be grouped as one unit. This lets the user check out items such as tools, equipment and consumables to areas such as job sites, trucks, departments, personnel or other user-designated locations in one transaction.

If it only takes minutes to check multiple items into a "kit" and if the company's staff spends even 20 minutes a day searching tools or servicing equipment, the overhead savings is dramatic. "Loss of tools and malfunctioning equipment is a major overhead cost for the construction industry. Our customers see a typical payback within three to four months," said Alison Falco, DSI president.

Supplying the construction industry with tracking solutions since 1981, DSI provides bar code systems that track tools and equipment, documents, capital assets, inventory and job tracking.

**(425) 284-1662**

**www.dynamic-systemsinc.com**

## Light towers illuminate operational savings

Atlas Copco Construction Equipment recently launched two new light towers — the HiLight V4 and the LED HiLight V5+.

The HiLight V5+ minimizes operational costs with its long-lasting LED bulbs and fuel-efficient operation. The HiLight V4 features four metal-halide floodlights to give contractors a dependable jobsite light source. Both models are lightweight, compact and feature Atlas Copco's exclusive HardHat canopy for extreme durability in rugged applications.

The LED floodlights are rated for 10,000 hours and are durable enough to withstand a range of challenges, from vibrations during transport to harsh work environments. Contractors with a fleet of 200 light towers, for example, can save as many as 600 bulbs each year when switching from metal-halide light towers to the HiLight V5+. The unit can achieve runtimes as long as 140 hours while minimizing fuel consumption on nighttime projects.

Atlas Copco's HiLight V4 has a Tier 4 Final Kubota diesel engine with a 6-kilowatt generator to power four metal-halide floodlights. The retractable, vertical mast on the HiLight V4 and HiLight V5+ make them easy to transport. The vertical mast design, coupled with the compact engine, results in an extremely small footprint, allowing as many as 20 units on a 53-foot trailer.

Both of the light towers' trailers feature a lifting beam with fork pockets and a heavy-duty lifting eye for easy loading and unloading. The trailers' combination hitch — a feature that comes standard with the light tower — ensures that operators can move a tower with a pickup and either a pintle or ball receiver mount.

The vertical masts also contribute to worksite safety. Contractors use the V4's 2,500-pound or the V5+'s 3,500-pound winch to raise the masts' five sections to the maximum height of 25 feet. Horizontal masts, on the other hand, require two winches — one to extend the mast and the other to raise it from horizontal to vertical. The vertical masts eliminate the risk of the masts tipping backward and expedite setup times. Once extended, the floodlights rotate 360 degrees and generate as much as 440,000 lumens to easily illuminate any section of a jobsite.

The light towers' HardHat canopies, a common feature on Atlas Copco portable air compressors, are a durable, lightweight alternative to steel and ABS (acrylonitrile butadiene styrene) thermoplastic canopies. The polyethylene canopy withstands corrosion, dents and fading, providing ongoing protection of the engine and overall unit. Unlike ABS canopies, this canopy won't crack on impact with debris or other materials.

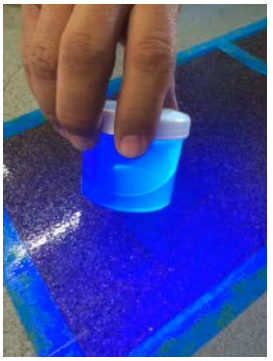
Atlas Copco designed the light towers for easy serviceability and longevity. Its control and power panel have independent circuit breakers that protect the electrical circuit if overloading or a short circuit occurs.

The panel also incorporates an hour meter for accurate service scheduling. The tower's galvanized steel mast prevents rust and features block spacers to reduce friction and minimize wear while raising and lowering the mast. The tower's spill-free frame with full fluid containment prevents worksite contamination if a leak occurs.

When the V4 and V5+'s lights are not in use, contractors can power electric handheld tools using the light towers' duplex 120-volt AC auxiliary receptacles. Equipment dealers can offer customers multiple options to tailor both units' light towers. For instance, customers can choose to include an electric winch, emergency stop button, ground connection, engine block heater or spark arrestor.

**www.atlascopco.us/usus**

## Moisture mitigation system added to waterproof technologies line



Formulators has introduced Aquaflex iMVS (Intrinsic Moisture Vapor Suppressant) to its line of waterproof technologies marketed as the Aquaflex total moisture mitigation system.

The patent-pending formulation covers a unique polymer coating mixture suited for flooring installations over concrete with measured moisture values of 95 percent in situ relative humidity and/or 12 pounds Measuring Moisture Vapor Emission Rate (MVER). Aquaflex iMVS forms a dense concrete/plastic matrix that restricts MVER and functions universally with any manufacturers' adhesive/cementitious chemistry.

"If it's true, the industry will continue to use moisture-sensitive adhesives for flooring installations. Then, why not do what I can to help these adhesives perform equally better and to unheard of limits?" asked Benny Dickens, inventor, founder and CEO of Formulators.

"While iMVS doesn't replace our Aquaflex waterproof adhesive, it will provide the necessary crutch water-based adhesives need to perform in areas with high concrete moisture. Aquaflex iMVS is universal in its application requiring minimal prep, is self-primed, non-silicate, bio-based, zero VOC, does not require mixing, is nonflammable and fast. The performance of Aquaflex iMVS has been third-party qualified to elevate the tolerance of any adhesive, from any manufacturer, regardless of chemistry to 95 percent RH and 12 pounds MVER."

Aquaflex iMVS is a leap forward in moisture suppressant technology. Instead of blocking moisture, Dickens said it suppresses moisture emissions to within flooring manufacturers' adhesive tolerance. In contrast, epoxy mitigation does not suppress. Rather, it blocks moisture to create a completely non-breathable film.

Epoxy mitigation is expensive, hazardous, time-consuming and difficult to install. The non-breathable film created by epoxy can also set in motion chemistry that leads to blistering and delamination. This situation is impossible with iMVS, said Dickens, who offers data for those who want to review it.

Aquaflex is now specified by several leading flooring manufacturers, major national retailers and hospital networks.

Formulators, based in Southern California, was founded in 2000 as a research and development manufacturer focusing on niche products to address failures in conventional solutions. Formulators produces Aquaflex, a specialty building products line of flooring installation and concrete repair products centered around its patented waterproof adhesive technology.

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## Portable stucco/EIFS pump fits in tight areas

Graco Inc., a leading manufacturer of fluid-handling equipment, recently introduced the ToughTek Portable Stucco Pump for stucco and EIFS (Exterior Insulation and Finish System) materials.

Compact and portable, ToughTek pumps use piston pump technology to deliver abrasive materials with a smooth, steady flow. For EIFS applications, the ToughTek S340e Stucco Pump handles air/water-resistive barrier materials, EIFS base coats and finish coats. For stucco applications, the unit handles scratch coats, brown coats and finish coats.

The pump's compact design and small footprint make it a snap to spray in tight areas. It's easy to set up and use and requires minimal maintenance. Its variable speed controls allow contractors to dial in the exact flow rate needed.

Using proprietary Graco technologies, the piston pumps stand up to abrasive stucco and EIFS materials to minimize maintenance downtime and reduce wear part expenses. The pump plugs into a standard 120V wall outlet or may be used with a 5.5 kW generator. It is easily lifted by two people and comes with a 20-gallon hopper.

Minneapolis-based Graco Inc. supplies technology and expertise for the management of fluids and coatings in both industrial and commercial applications. It designs, manufactures and markets systems and equipment to move, measure, control, dispense, and spray fluid and powder materials.

**www.graco.com/stucco**

## Mongoose X : 1 Tool + Your Imagination = 10,000 Designs

THE Mongoose X, superstar of decorative concrete engraving, is more robust than ever before. Mongoose X now comes equipped with a long service life motor for demanding applications. 50% more torque and up to 20% higher overload capacity make quick work of material removal.

Spinning at a whopping 11,000 RPMs, the Mongoose X motor features a safety clutch with direct mechanical decoupling to minimize kickback in case of jamming of the disc.

The Mongoose X is capable of a wide range of cuts, including straight cuts, arcs and circles.

Other features include:

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- Auto-stop carbon brushes to protect the motor
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## Smart phones and app can measure coating thickness


Gardco's new SmarTest concept consisting of an app and a wireless sensor offers an excellent solution for measuring coating thickness with the help of smart phones and tablets.

The SmarTest version of SIDSP sensors to measure coating thickness combines exceptional precision in measuring and resistance to interference with the advantages of modern wireless technology. The digitally generated readings on the sensor are relayed by Bluetooth to the user's smart phone or tablet. The SmarTest App functions as a device for evaluating and replaces a conventional coating thickness gauge.

The app's functions include a clear display of current measuring value, statistical evaluation, storage of measuring values in files, two-point calibration, measuring unit metric/imperial switchover and export of the series of measurements in the CSV format. All the functionalities of a smart phone are available for data transfer.

For instance, users can send measuring data to any receiver by email. The intelligent sensor is made to fit any jacket pocket. In combination with smart phones or tablets, this forms an ultra-modern full set for experts on site to measure coating thickness.

The sensor is equipped with the LiFePO battery which can function for up to eight hours in continuous operation. Readings exceeding the set limits are indicated on the sensor's green/red LED. SmarTest functions on old smart phone models as well as the newest ones. The dual Bluetooth module ensures a long operating time in modern devices thanks to the Bluetooth low energy mode. SmarTest is a most flexible solution: It can also be supplied in other combinations with any of the SIDSP-sensors of the MiniTest 700 series to cover a wide field of different applications.

**(800) 762-2478**

**www.gardco.com**

## Polyaspartic coating now available in three colors

Versatile Building Products 5120 Polyaspartic now comes in three colors: Whisper Grey, Slate Grey and Cottonwood, the company's most popular colors for industrial floors.

The coating has been formulated to be one of the easiest polyaspartic floor coatings to apply by roller and brush, making it an ideal topcoat to use over a variety of concrete and epoxy flooring. Abrasion- and UV-resistant, 5120 is considered combustible and should be restricted to well-ventilated areas.

This unique formulation allows for more than 45 minutes of pot life, yet the material dries in as little as 20 minutes when applied to the flooring surface. In most cases installers can get back on the floor in 60 minutes and the system will accept light vehicle traffic the next day. It can be installed at temperatures ranging from 30 to 100 degrees Fahrenheit.

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# Email Marketing

## Stay in front of your customers with a relevant e-blast full of useful content

*by Ashley Kizzire*

In the world of email marketing, the "e-blast" can be a highly successful vehicle for connecting with your customers. But all too often, decorative concrete contractors underuse this vital marketing strategy. Even when the strategy is employed, it's often misunderstood and target audiences are "blasted" with junk. Instead, reach your customers with great content they can use. And never confuse the importance of quality over quantity. The end result? You become a trusted resource for your customers, and new business follows.

The benefits of adopting an effective e-blast strategy are well worth the uncomplicated effort it involves. Cost-efficient when compared to direct mail and other efforts, an e-blast allows you to stay in front of your customers on a regular basis. Web applications and email marketing software have simplified the process. With a point and click, your message is loaded and sent to your email distribution. Once you've selected your distribution platform, beginning an e-blast program doesn't have to be a complicated project.

### Getting started

As with any marketing effort, the key to a successful e-blast program begins with a clear strategy. First, map out your goals. They might include the following typical examples:

- increase awareness of your products and services;
- build trust with potential clients by showing how you work, your company's expertise and the results you can deliver; and
- ultimately, generate new leads for your business.

Next, plan your content. As you plan, the most important thing to remember is your content isn't about you, it's about your customer. In other words, don't tell your customers only what you want to say. Tell your customers what they want — and need — to hear. According to Constant Contact, a leading Web application for email marketing, 56 percent of consumers blame irrelevant content as a reason for disengaging with a brand online. Your message must clearly and quickly relate to your customers' needs, or they'll click delete.

Brainstorm and ask probing questions that will help you get inside your typical customer's thought processes. What problems do your customers face and how can you help solve them? Have you recently completed a unique project? Showcase your work in a case study. But even case studies can take a wrong turn if it's all about you.

The case study has to pass the "so what" factor, with the customer's benefits clearly stated at the beginning. Simply regurgitating project facts and stats in paragraph form won't engage your audience. Examine the project. What about it could help other clients in their business? What solutions does the case study exemplify?

As you plan your content, keep in mind that a simple structure is best. Your customers are bombarded by messages every day, and research from Constant Contact shows that most people only deem 14 percent of their email as something they must read immediately. The most effective e-blasts are short and to the point. It's not a newsletter. It's not a digital magazine. One brief, useful article and a couple of shorter blurbs and news items are typical for most e-blasts. Include videos whenever possible, as these offer some of the highest click-through rates on the Internet. As well, good images are a must for an engaging e-blast.

### Build your list

In addition to meaningful content, your email database is another essential part of a successful e-blast program. If you're just getting started with an email marketing program, you can easily merge most databases with your email marketing software or Web application. You can begin with your existing business contacts to form your email list. Once the list is in place, think about how to grow it. In short, make the most of every opportunity. Here are some ideas:

**Speaking engagements.** Will you be speaking on decorative concrete techniques at a local association's meeting? Be sure to have a collection spot where attendees can register to receive your news and tips. By leaving a business card, attendees can opt-in for your e-blast and perhaps even register to receive a prize or giveaway in return.

**Trade shows.** Likewise, if you exhibit at any shows — maybe the local home and garden show — once again, set up a collection spot where attendees can register to receive news from you and register to receive a giveaway.

**Website.** Add a sign-up area on your website where visitors can register for your e-blasts. And a "pop-up" field could appear only for your website visitors who haven't registered for your e-blast. To get the most mileage out of this, make sure the website signup has a "refer a friend" option.

**Social media.** Promote your e-blast through Facebook, Twitter and other social media efforts. Share the link to your website signup, and when your e-blast is up and running, share it via social media, too.

**Email signature.** Place a link to your website signup page below your contact info in your email signature. Have others at your company do the same.

### Beyond the basics – Personalize

According to Adobe's 2015 Digital Trends Report, personalization ranks as the highest item of priority in its survey of 6,000 business professionals with an interest in digital business.

Personalizing your content is another way to add relevance. When your emails contain personalized content, your messages will stand out in the minds of your information-overloaded customers.

One easy way to personalize is to use the words "you" and "your," particularly in article titles and subject lines.

For more advanced email marketing efforts, try segmenting your content. For example, if your customers fall into two camps — commercial or residential — divide your email lists into two groups and tweak your content to fit each group's unique needs. Or, perhaps all your decor work involves commercial projects. In this case, you may want to segment your email by the industries you serve such as retail, offices, restaurants and so on. It doesn't have to be a complicated effort. You can take the same basic content and change the wording slightly to be more relevant to each audience.

No matter what your approach, remember email marketing can be a relatively simple way to stay in touch with your customers. Whether your customers are vastly different or fairly homogenous, relevant content is the key to building a successful email program — and lasting relationships with your clients.

*For more than 20 years, Ashley Kizzire has written for commercial markets, specializing in the concrete and construction industry since 2000. Based in Birmingham, Alabama, Ashley is a content writer and marketing specialist at Constructive Communication Inc. She can be reached at akizzire@constructivecommunication.com.*

# ACI Lauds Winners of Concrete Construction Awards

## Museum in France tops the list

The American Concrete Institute recognized the winners of its inaugural Excellence in Concrete Construction Awards during the ACI Awards Gala at the Concrete Convention & Exposition, Nov. 9, 2015, in Denver, Colorado.

The awards, designed to honor the concrete industry's most creative projects, recognize concrete innovation, technology and excellence worldwide. To be eligible to participate, projects must have won a competition at a local ACI chapter level and been submitted by that chapter or one of ACI's international partners.

An independent panel of industry professionals judged projects and selected winners based on architectural and engineering merit, creativity, innovative construction techniques or solutions, innovative use of materials, ingenuity, sustainability and resilience, and functionality.

The winning projects were selected from among several possible categories, with a first- and second-place award available in each, as well as honorable mentions.

The highest honor, aptly named "The Excellence Award," was presented to the Museum of European and Mediterranean Civilizations (MuCEM) located in Marseille, France. Selected for its outstanding concrete innovation and technology, the icon of urban rejuvenation is situated on the banks of Marseille's 2,600-year-old harbor. With exhibitions on three of its floors, the MuCEM was visited by a whopping 3.4 million people during its first 15 months. The facility houses the first French national museum outside of Paris.

Winners of the remaining awards are:

For detailed project overviews and additional pictures, visit **ConcreteDecor.net**

Photos courtesy of the American Concrete Institute

### Low-rise Buildings

**First place: Museum of European and Mediterranean Civilizations in Marseille, France,** submitted by the Paris Chapter

At the end of a historic pier where immigrants from Mediterranean countries once landed, the MuCEM resembles a veiled cube that's linked to the city via two narrow footbridges. Wide exhibition halls are surrounded by a sheltered promenade that extends upward to the rooftop terrace.

The MuCEM represents an outstanding architectural feat achieved with ultra-high performance fiber-reinforced concrete (UHPFRC) applied in large scale to a building to widen exhibition spaces, minimize material consumption and provide shelter while letting in abundant natural lighting. Notable features include 330 tree-shaped columns that support vertical loads and surround the exhibition building, 380 lattice panels that support each other for the facade and 230 precast I-shaped beams within the main building above the exhibition halls. These beams are designed to hide an array of mechanical equipment yet keep it accessible.

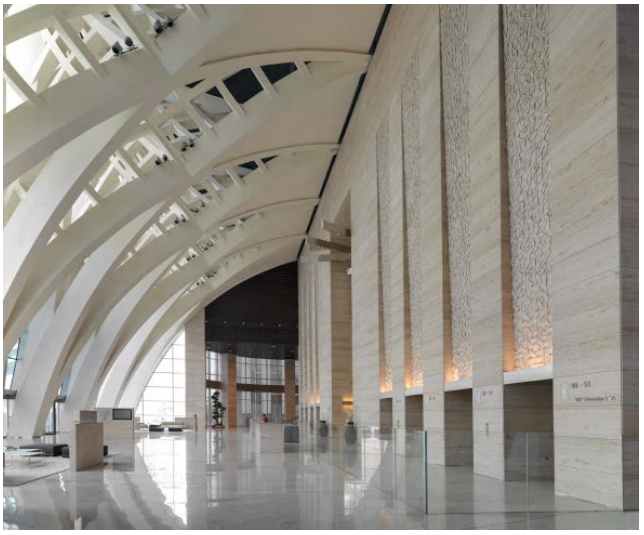
**Second place: Louisiana Sports Hall of Fame and Northwest Louisiana History Museum in Natchitoches, Louisiana,** submitted by the Louisiana Chapter

## High-rise Buildings

**First place: Al Hamra Business Tower in Kuwait City, Kuwait,** submitted by the Kuwait Chapter

The tallest concrete structure in the Middle East and the nation's tallest skyscraper, the Al Hamra Business Tower occupies the site that was once home to Kuwait's first cinema. The mixed-use development features the business tower designed by the renowned U.S. firm of Skidmore, Owings and Merrill, a luxury center with a built-up area of almost 66,500 square meters and an 11-level parking garage with 2,000 spaces.

The project used self-compacting concrete ranging in strength from C-40 to C-80 N/mm (Newton/millimeter). Huge pumps had to get the concrete to the top of the project in less than 15 minutes because of the extremely dry weather. For the foundation and part of the substructure, the SCC mix was proportioned with reduced-size coarse aggregate, increased paste content, super-plasticizer and air-entraining admixtures.



**Honorable Mention: Tower One – World Trade Center in New York, New York,** submitted by the Concrete Industry Board, an ACI New York City Chapter

**Honorable Mention: Adobe Corporate Campus – Phase 1 in Lehi, Utah,** submitted by the Intermountain Chapter

## Decorative Concrete

**First place: Jean Bouin Stadium in Paris, France,** submitted by the Paris Chapter

A stadium originally built in 1925 in a prominent residential district in Paris no longer met today's rugby's requirements, so a new Jean Bouin Stadium was built. The 20,000-seat facility, which opened in 2013, has three floors below ground level and two to six levels above. It includes a gym, an underground parking garage and office space. An ultra-thin envelope of UHPFRC, that undulates like a giant wave, covers the entire building like a giant 3-D jigsaw puzzle.

The 3,600 triangular pieces of UHPFRC serve many purposes. Some are built with 30 percent voids to allow light to pass through. Others provide a transition toward the roof panels. And still others serve as structural roof panels. The beauty of this design is that the facility uses a single construction material, UHPFRC, where traditional construction would have required four components. The structure is guaranteed a 100-year lifespan.

**Second place: Downtown Doral Park Pavilion in Doral, Florida,** submitted by the South Florida Chapter

## Infrastructure

**First place: Cable-stayed foot bridge in Celakovice, Czech Republic,** submitted by the Czech Concrete Society

The award-winning footbridge over the Labe River in Celakovice, which connects the town with a popular recreational area, was built to support pedestrians, cyclists and emergency vehicles. It is the first structure in the Czech Republic which has a superstructure — in this case a segmental bridge deck — made entirely of UHPFRC and supported by fully locked cable-stays. The deck slab is only 60 millimeters deep and no bar reinforcement was used.

Using local materials and high-strength steel fibers, the developed self-compacting concrete mix kept its workability for about 90 minutes, which allowed the UHPFRC to be applied in the form of ready-mixed concrete. The project was assembled very fast, taking only a month to complete the main span above the river. The considerably lightweight footbridge is expected to last more than 120 years with limited maintenance.

**Second place: Interstate 5 Willamette River bridge project in Eugene, Oregon,** submitted by the Oregon Chapter

## Repair & Restoration

**First place: Mission Bridge seismic retrofit in Abbotsford, British Columbia, Canada,** submitted by the British Columbia Chapter

The Mission Bridge — a four-lane, 1-kilometer-long major crossing of the Fraser River in British Columbia, Canada — was structurally retrofitted and had ground improvement work completed in 2012 because it was in a high seismic zone and was a critical link in the province's disaster recovery network. The remaining retrofit task involved densifying soils with compaction piles but a trial contract demonstrated piles wouldn't be effective. Traditional column jacketing with elliptical steel was an option but would cost too much. An innovative column-jacketing approach using UHPFRC was selected.

The method not only saved $1.5 million but the ultra-thin jacket was unobtrusive aesthetically, met technical demands when it came to seismic standards and eliminated below-ground risks from piling. This project demonstrated the unique properties of UHPFRC to solve significant challenges in the seismic retrofit of large concrete columns.

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# Rachel Knigge FloorMaps Inc.

## Bella Vista, Arkansas

*by Vanessa Salvia*

Rachel Knigge moved quickly from the art and graphic design world into the concrete realm, and her influence continues to grow as she expands her company.

Knigge, pronounced kuh-NIG-gee, was born in Houston, Texas, and grew up in Waco, where she trained as a designer in commercial art and advertising. In 2001, she moved with her husband, child and a second child on the way to Bella Vista, Arkansas, and eventually got a job as marketing coordinator for Ameripolish, a company formed by her brother-in-law in 2005.

"Usually I worked for smaller companies as their marketing guru covering the design of all catalogs, instruction sheets and website design," Knigge says. For Ameripolish, she handled all the design work. For its trade show booths, the company used concrete slabs with solid arcs and blocks of color on them, which Knigge says wasn't very creative.

Photo courtesy of the Southern Arkansas University Photo Team

"I wanted to step outside the box," she says. "I wanted to try something different. I knew about stencils and I was getting into the concrete industry and learning what there was to know about it and the color mediums that could be used."

In 2009, Knigge, 31, began creating stencils, which has since become her expertise. Back then, she knew Ameripolish could purchase stencils but it wasn't as cost effective as producing its own, so it purchased a machine for her to make them. "I was cutting them for customers who would ask for design work as a service we provided," she recalls. "It evolved into a product line, but it was really intended to be just for trade shows. We never knew that word would spread. It got to the point I was cutting more designs than I was creating ads."

Around 2009, when the economy began to falter, Ameripolish had two graphic designers including Knigge, but not enough work for both. That led to Knigge's boss suggesting she go off on her own. So she bought some of the design equipment she had purchased for the company and set about building her own name.

### Embarking on her own

Stencil work involves creating a design that can be systematically applied to a concrete floor in different colors and in different mediums, such as epoxies or polyurea. The stencils come with instructions that allow non-artists to apply them like the pros. "The whole goal is to provide customers with something that is a no-brainer, where the stencil creates the design," Knigge says.

She was initially nervous about making the jump to her own company, because of her self-described "artist mentality."

"I can make a company grow and market and brand a company. That's something I'm really good at," she says. "But running a company and the daily ins and outs have been a challenge to overcome. Over the eight years since I've been doing this I've learned through trial and error."

When her customers would request a stencil design, she would always say yes even if she hadn't done that type of design before. She says she would break the design apart to try and figure out how to make it work. Over time, she managed to learn the best ways to pull things off. "For instance, if you're using dye it immediately flashes and dries and you move to the next step, whereas a different color medium like epoxy or polyurea would take much longer."

Initially, she says, she only knew how to apply stencils


Photo courtesy of FloorMaps Inc.

using Ameripolish dyes. That's no longer the case, although solvent-based dyes are her preferred medium. She realized the importance of broadening the color mediums she was using, so she developed techniques for sandblasting stencils and using perforated printed designs with epoxy overlays, in which the design is sandwiched underneath clear epoxy.

"There are so many different techniques," she says. "I try to find different solutions, whatever makes it easier for my customers," to look good for their customers while saving them time and money.

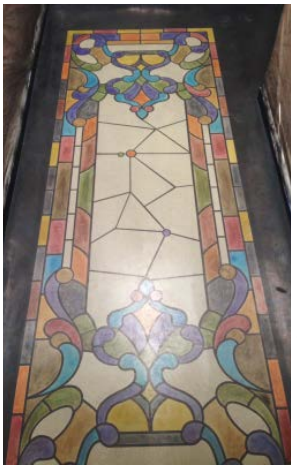
Knigge says working with polyurea and the epoxies takes more time so users have to be patient. "I'm not known for my patience so it's a challenge!" she says with a laugh. "But it appeals to me."

Eager to work with precast concrete and also to use stenciling techniques to create inlaid designs, Knigge has been recently intrigued with and is researching a new product called a sugar print, an image made of a sugar compound printed onto cardboard stock, which is set into the precast item. The sugar retards the concrete from curing properly, so when the mold is released the surface looks like exposed pebbles you'd find in walkways.

Most of the time, companies hire Knigge to create stencil designs they'll apply themselves, but she's also available to help with installations if the design is particularly complicated. Her primary job, though, is creating stencils for designs her customers can't create themselves.

## From Aunties and brawls to diamonds and maps

One rewarding job that Knigge did last summer was an abstract turtle for the entryway of Echuca Regional Health, a new public hospital in the port town of Echuca-Moama, Australia. That job required a

Photos courtesy of FloorMaps Inc.

2,000-square-foot installation to be done in less than three days. In this case, the client found Knigge through word of mouth, and the coordinator for the design researched and selected her.

The hospital, a two-and-a-half-hour drive north of Melbourne, featured stenciled artwork in the foyer. The original art was designed by an Aboriginal elder, respectfully called an "Auntie." Some elements of the design continued around the edges of the large room and the walking areas.

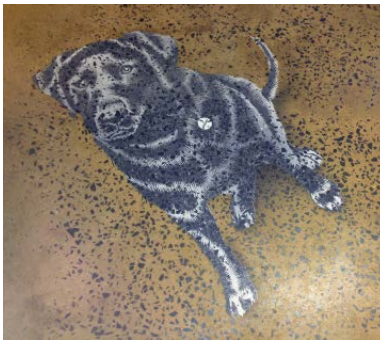
"It was a really big honor," Knigge says. "I got to meet several of the Aunties. It was like meeting the chief of the tribe but it was this Auntie and the Auntie above her and the Auntie above her. For them to be touched as much as they were by the design and how much it meant to them to have me transfer it in such a way that it was identical to what she wanted was very rewarding."

Aboriginal art utilizes dots, straight and curved lines, and concentric circles that have deep symbolic meaning. In the Aboriginal belief system, each animal also holds a special meaning. "There are many elements in the design that all have meaning and tie together," says Knigge. "It's a very powerful statement."

Another job Knigge designed but did not install was for the Porsche raceway next to the Atlanta airport. As planes fly in, passengers can see a huge red stripe that has white Porsche letters on it. "That's my stencil. I created it!" Knigge says with enthusiasm.

In 2014, Knigge was a winner in the Concrete Decor Show's first Brawl in the Fall decorative concrete artistry competition where she placed third for her rendition of a 3-D Rubik's Cube she made from a stencil. The cube, which wowed judges and attendees in Fort Worth, Texas, appeared to be popping out of the floor while its bottom was melting into a puddle of combined colors. People took photos of themselves sitting or standing on the cube.

"I really enjoy working with that kind of stuff. They're a lot of fun to do," Knigge



says, even though 3-D designs don't sell very well because they're so complicated to install. The Rubik's Cube took seven layers of stencil and numerous individual pieces for each layer.

Late last year, a contractor hired her to install a map of the High Uintas Wilderness and the surrounding counties in Duchesne, Utah, near Salt Lake City. The 17-by-12-foot map includes all the rivers, reservoirs, main roads and other details for Duchesne County, with the roads 1/4 inch wide.

## Branching out

In the opening episode of the History TV show "Pawn Stars," Knigge helped Classic Coatings Systems install the gold leaf over black epoxy graphic for the show. Subsequently, that work is shown five or six times each episode.

The graphic artist is interested in exploring other areas of decorative concrete artwork such as custom inlay pieces for terrazzo flooring and digital floor graphics. She is considering purchasing a water jet machine to cut precise designs out of metal or stone.

"I want to start doing inlays and get into design solutions other than floor stencils," says Knigge. For instance, with the new equipment, she can create detailed logos or images that can be inlaid into precast countertops.

Even though she's embarking on work she hasn't done before, she doesn't doubt she can pull it off. "When I couldn't figure out how to do something I would tenaciously dwell on it until I could," she says. "One successful mishap after another ended up working in my favor."

**www.floormapsinc.com**

**See more photos from this feature online at ConcreteDecor.net**

# A Delightful Dive: World's Deepest Pool

## Y-40, The Deep Joy
## Montegrotto Terme, Padua, Italy

*by Vanessa Salvia*

A pool in a four-star hotel in Italy gives new meaning to the phrase "deep end." This pool, known as the Y-40 or "The Deep Joy," in the Montegrotto Terma region of Padua, Italy, features a plunging crevasse that sinks to 138 feet (42 meters), a depth that could easily engulf a 13-story building.

Ideal Work, a leading European company in flooring, hardscaping and decorative concrete, used the company's masterful artificial rocks to create a submerged grotto. Certified by Guinness World Records as the deepest thermal swimming pool in the world, the pool has become a popular attraction for scuba divers and freedivers, athletic divers who hold their breath and don't use air tanks.

Established in 1996, Ideal Work in Treviso, Italy, has created some of Europe's most beautiful classic, Old-World style and modern stamped and stained concrete, including cementitious toppings and overlays. Luca Seminati, Ideal Work's managing director, says the company helped create the marine setting, which was completed in June 2014, constructing four grottos at the bottom of the pool with very natural and realistic effects.

"The grottos were created with Ideal Tix plaster," says Seminati. "It was developed for uses requiring substantial thicknesses, up to 6 or 7 centimeters [almost 3 inches] and high durability." The plaster works well in settings that have direct contact with water such as swimming pools, spas and water parks.

Photos courtesy of Ideal Work

The world's deepest thermal swimming pool, popular with divers, is lined with realistic faux rocks and crevices that plunge to 138 feet.

The Deep Joy, part of the amenities of the Hotel Terme Millepini, a 100-room luxury hotel just outside of Venice, is filled with a mineral-rich water that emerges from local springs at about 190 degrees Fahrenheit (87 degrees Celsius) and is brought down to a constant temperature of about 91 degrees F (33 to 34 degrees C). The water's temperature allows divers to take the plunge without the wet suits they'd need in open seas.


Created by architect Emanuele Boaretto, the pool is designed very distinctively, says Seminati. It features underwater caves and a suspended, transparent tunnel beneath the surface that guests can walk through. Viewing platforms are installed at various depths, ranging from 4 feet (1.3 meters) to 39 feet (12 meters). Below these platforms, the walls of the pool narrow into a funnel which plunges straight down to the full depth of the pool.

"The large windows at the sides of the basin 5 meters [16 feet] down create a space where the internal and external transparency intermingles. This detail enables spectators to cross the swimming pool horizontally, with all-around visibility above and below."

The materials used to create the grottos at the pool's bottom needed to be capable of being submerged without undergoing noticeable changes over time. Ideal Work was chosen to construct the grottos because of its outstanding track record pertaining to water parks, spas and theme parks it has worked on. Once the Ideal Tix plaster was

### Project at a Glance

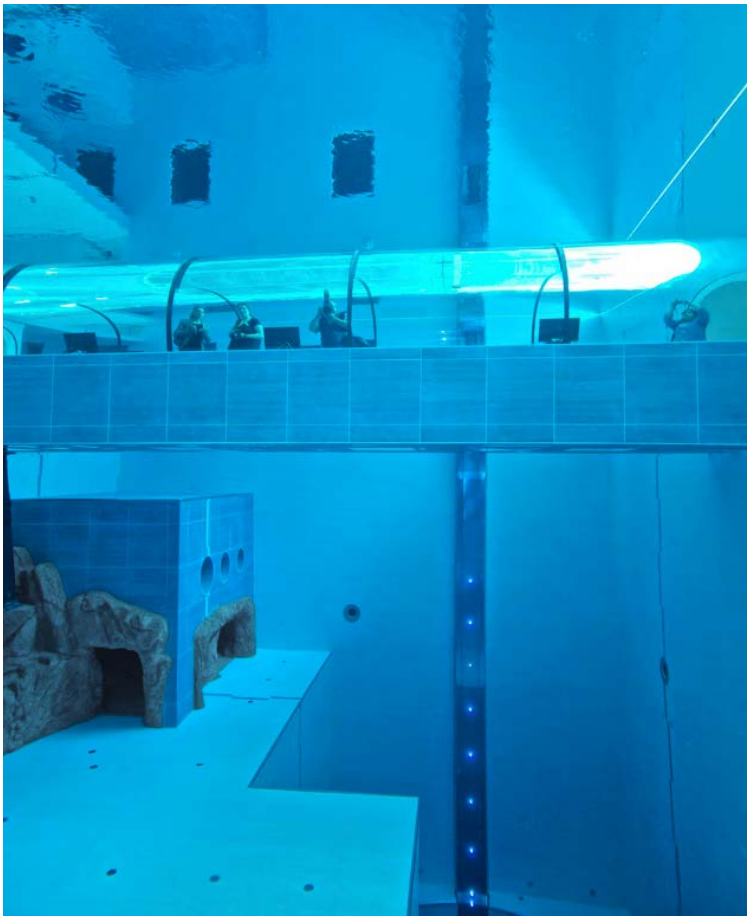
**Client:** Hotel Terme Millepini, Montegrotto Terme, Padua, Italy

**Contractor:** Ideal Work, Treviso, Italy
**www.idealwork.com**

**Scope of project:** Creating realistic-looking artificial rocks for caves and grottos in the world's deepest swimming and diving pool

**Products used:** Ideal Work's Ideal Tix plaster

**Most challenging aspect:** Products need to look good and stay intact while being constantly submerged



applied, a special rubber mold was used to create texture.

"The artificial rocks obtained through this process give the swimming pool great natural and realistic scenic impact, blending perfectly with the surroundings," says Seminati. "The grottos are coated with special protective treatments that make them resistant to environmental conditions. They require only limited maintenance and also retain a perfect appearance over time."

The Ideal Work system allows artificial rocks, such as those in the Deep Joy, to be created quickly and easily, because the company only works with trained installers. "Professional installation enables and guarantees the creation of unique work such as this unique pool, which can be found in only one place in the world," says Seminati.

# Concrete Overlay a Big Part of College's New Design

## Lane Community College's CLASS Building Eugene, Oregon

*by Vanessa Salvia*

EUGENE, Oregon, is perhaps best known for being the home of the University of Oregon and its Ducks football team, but UO's not the only game in town. Lane Community College — or Lane for short — is the third-largest community college in the state with a total annual enrollment of more than 36,000 students. Lane's campus succeeded the Eugene Technical-Vocational School that was founded in 1938. Lane itself was founded in 1964 by a vote of local citizens, and the main campus opened in 1968.

The core of the main campus, called the Center Building, was constructed more than 50 years ago. Today, most of the Center Building is history as it was redesigned and much of it replaced with a new modern structure. That structure, which plays a large role in the college's new look, features a concrete overlay by CTS Cement Manufacturing Corp.

Plans called for 22,000 square feet of flooring on two floors to be topped with Rapid Set Tru PC by CTS Cement. Albany, Oregon's ModernCrete was selected to install the floor, and began work in June 2015 after classes ended for the main academic year.

Photos by Vanessa Salvia

### Project at a Glance

**Client:** Lane Community College, Eugene, Oregon

**Contractor:** ModernCrete, Albany, Oregon
**www.moderncrete.com**

**Scope of project:** 22,000 square feet of flooring on two floors topped with Rapid Set Tru PC by CTS Cement, 16-guage zinc strips provide a wavy pattern throughout the floor.

**Products used:** Rapid Set's TXP Epoxy Primer, Rapid Set LevelFlor, Rapid Set Acrylic Primer, Tru PC Broadcast Aggregate

**Most challenging aspect:** Construction needed to be completed before the building opened to students at the start of the school year. Numerous other trades also shared the space. Work had to be done in phases so the floor could be covered up to allow for other work to proceed.

### Tru PC debuts

At World of Concrete 2015, CTS Cement Manufacturing introduced Rapid Set Tru PC, a new product that can quickly and easily simulate the appearance of polished concrete without the time and cost of installing a new concrete floor.

"Tru PC is an advanced, professional-grade, low-polymer hydraulic cement-based, self-leveling topping," says Joe Zingale, flooring group specialist at CTS Cement. "The new gray Tru PC is specifically designed for the look of polished flooring. We have loaded the Tru PC with some of the finest aggregates plus have a larger broadcast aggregate available. It's harder and has more abrasive resistance than our original Tru product."

Demolition of the Center Building commenced in December 2013, and ModernCrete began talks and planning with the college in November 2014. The original floor was covered with bricks embedded so deeply they would have been very difficult to remove. Originally, the college was going to have a different contractor install tile but ModernCrete proposed the overlay. The company knew it would provide the polished concrete look the school wanted for close to the same amount of money as the tile.

Eli Cronin, operations manager for the Lane job, says the company's estimator suggested the Tru PC product to the college as an alternative to tile. "It has many of the same benefits of polished concrete and with this the college won't have to maintain tile," Cronin says.

## CLASS takes center's stage

Over the decades since Lane's Center Building was constructed, the campus has grown drastically in both size and student population. The building's function, however, has remained more or less the same. It is home to the school's cafeteria and culinary arts program, study spaces, the library and bookstore. The building as a whole needed to be modernized and updated to meet the needs of 21st century students.

The finished building — now known as CLASS, or Center for Learning and Student Success — is built to LEED Silver certification standards. Eugene-based Pivot Architecture developed the building design, which called for a learning commons with resources for students, improved food service facilities, a more user-friendly and accessible bookstore, and an open plaza.

The floor design called for the natural color of the Tru PC material along with Ameripolish Platinum color poured in with the overlay and 16-gauge zinc strips. The strips are installed in a wavy pattern loosely following the elevation lines on the topographic map of the building's lot.

The entire building project, which encompasses both remodeled and new space, totals 106,222 gross square feet. The ModernCrete crew, who had to work around numerous other trades in the building, completed the work in three stages, beginning with a mock-up upstairs. "We tortured the overlay and it held up," says Cronin. "We had trouble removing it from the floor when they wanted us to get it out."

## Staying Tru

Cronin's crew applied Rapid Set's TXP Epoxy Primer followed by Rapid Set LevelFlor, a hydraulic cement-based self-leveling underlayment suitable for use both indoor and out. The LevelFlor filled low spots and corrected unevenness prior to the installation of the rest of the system. The Tru PC was applied at a thickness of 3/8 inch, followed by Rapid Set Acrylic Primer. Tru PC Broadcast Aggregate in 3/16 to 1/4 inch was broadcasted into the wet Tru PC, and zinc strips were placed throughout the floor. The floor was ground and polished to 800 grit.

Chris Bishops with DecoPrep Surface Solutions & Rental Supply, of Austin, Texas, provided the Tru PC, LevelFlor, primers and Tru PC Broadcast Aggregate for the job. Since the first introduction of Tru PC, some small changes have been made to the formulation, including more aggregate added to the bag.

"Once we selected the aggregate for the Tru PC, the challenging part was trying to keep the Tru PC's price point close to our Tru product," explains Zingale. "Shipping this aggregate to our bagging facilities is expensive. Our beginning formulation polished extremely well, but wasn't as user-friendly as our present Tru PC. We did increase the size of the bag and having it gray does offset some of the bag price."

The product, not including the Tru PC Broadcast Aggregate, was also installed on a 32,000-square-foot Home Depot expansion project in Falls Church, Virginia, with excellent results. The largest job previously using Tru PC was about 5,000 square feet.

"The school wanted a concrete look and the Tru PC has the look of concrete,"

says Zingale. "They reviewed both the Tru and the Tru PC, and the Tru PC looks more like concrete because it has very similar aggregates. Creating that look by broadcasting our Tru PC aggregate into the Tru would have been a real challenge for the contractor."

Once the main 6,000 square feet of the floor at Lane was finished, it was covered up to protect it from the other trades. The ModernCrete crew then moved on to a smaller portion of the ground floor before repeating the process on the second level. One of the challenges was working around dozens of other people and getting enough workable open-floor space. "There was up to 120 people working in this job site," says Cronin. "It was crazy."

The floor was finished long before the other trades completed their work. The finished building was revealed just before the new school year commennced Sept. 28.


The next generation of Compagnons.

# Apprenticeship in France

## Centuries-old trade association welcomes decorative concrete into the fold

*by Vanessa Salvia*

Apprenticeships, or a system of training new generations of skilled craftsmen, have a long and rich history in many countries of the world, though it never caught on with much fervor in the United States.

The French version, Compagnons du Tour de France, or Companions, was developed between the 9th and 13th centuries. The name comes from doing a "tour" around France for apprenticeships with masters.

Photos courtesy of Beton Academy

Stéphane Fontana, left, and Mike Archambault.

The first written evidence of the existence of Compagnons dates to the 12th century, after the Council of Troyes. Companions were working on constructing cathedrals and were given certain freedoms, such as the right to move freely from site to site.

The scientific and engineering knowledge required to complete the cathedral work was closely held, passed only by word of mouth from student to teacher across generations. In November 2010, the Compagnons tradition was added to a UNESCO (the United Nations Educational, Scientific and Cultural Organization) list called the Representative List of the Intangible Cultural Heritage of Humanity, meaning it is among those important traditions worth safeguarding that are inherited from our ancestors and passed on to our descendants, such as oral folklore, dances and other social practices.

The companionship of trades came to include stonecutters, masons, carpenters, roofers, locksmiths, plumbers, cabinetmakers and plasterers. Beginning in 2015, decorative concrete artisans are included in this highly regarded group.

"This is the continuation of a method of technical education and philosophy whose principle goes back to the origins of trades," says Mike Archambault, whose company, Moderne Methode, is a leader in France in the fields of research and development, manufacturing and training through Archambault's Beton Academy, a French-government recognized training school. "The Companions program, which participated in the construction of cathedrals and the Eiffel Tower, is today at the forefront of the latest achievements and participates in prestigious works of contemporary restorations and major construction sites."

Hicham Bennani, director of the Compagnons' European training institute, says it was important to include decorative concrete in this group. "First, we added

it because we don't have a similar kind of program in our present catalog, and secondly, because the technical side is very important here. Technical skill is required for a perfect execution, and this is exactly the added value we want to bring to our classical training programs."

This new program came about in part due to the efforts of Archambault to introduce more decorative concrete arts. Archambault moved into the European market in 2005 through his extensive work on Disneyland resorts in Paris. Since 2010, Archambault has taught students about a wide range of decorative concrete products and tools.

"In recent years proper concrete flatwork hand-finishing techniques like floating, jointing, edgers, broom and band are being more and more utilized by French artisans as they get acquainted to it through our Beton Academy," says Archambault. "More than 500 trainees per year are coming to this training school, and this is just the start."

The Companions program is based on three key principles, which Archambault explains: "The occupation, as the assistant is primarily a great professional. The trip, as in during his Tour de France, the Companion encounters, exchanges and learns in all regions it traverses. And the transmission, because transmitting his knowledge is part of his way of living his profession," Archambault says. "Through these three principles, the Companionship favors solidarity, personal and professional development success."

In partnership with Compagnons, Beton Academy will host about 90 decorative concrete trainings throughout France each year, reaching about 1,500 trainees. The first group of students began their studies in September 2015. Once they graduate and receive their diploma, they will be considered officially qualified to be decorative concrete applicators.

"This is, for me, a sign that our trade is becoming well recognized and full of opportunities for the future of our industry," says Archambault. "The Compagnonnage today is an original way to train for a real job by opening a wide range of potential hires. Open to all, the Companionship offers everyone the opportunity to take the path of a new life that is rich and full of promise. A Companion is recognized everywhere and by everyone as an exemplary professional."

Compagnons accepts students as young as 16 years old as apprentices and interns in work/study training programs. It offers help to those 18 years and older who are seeking jobs in France. Bennani says the course load is about 25 percent theoretical, involving concrete rheology, the technological elements, plan reading, and technical and artistic drawing. About 75 percent is practical, involving actual implementation.

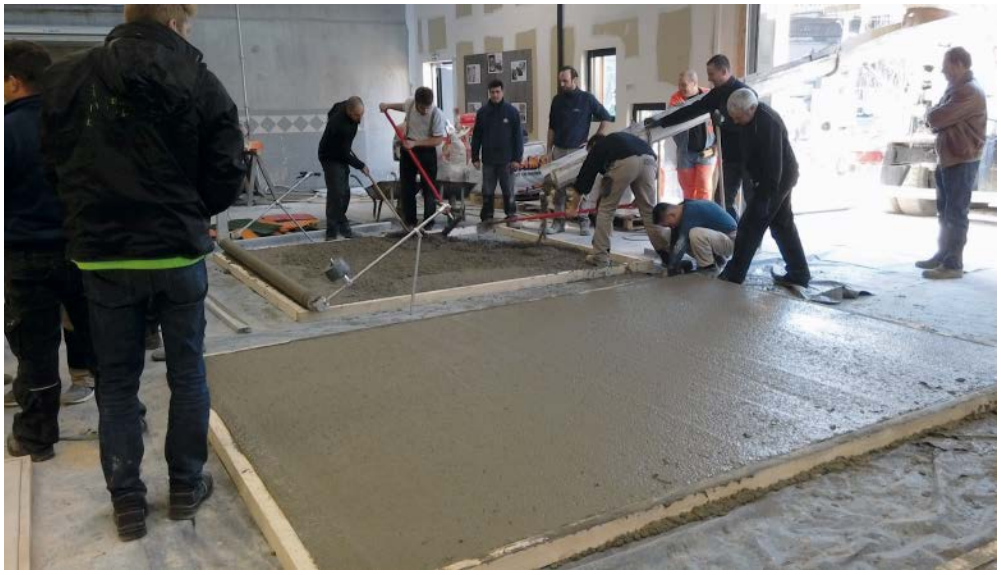
"The suggested program includes a minimum of 420 and up to 450 hours of study time," Bennani says. "Candidates must have experience in the fields of landscaping, masonry and tile laying. After about 10 months, trainees will have 12 weeks at the school center and the rest of the time will be spent in a company."

At this point, the program is exclusive, accepting only eight to 10 students at the most. One instructor teaches the practical fieldwork, one teaches the theoretical side and one teaches the artistic side. This program is sure to contribute to a rich new history of concrete in France.

"We really hope to succeed with this unique action here in France, which is a strong added value for any skilled worker," says Bennani.

**www.beton-academy.com**

**www.compagnonsdutourdefrance.org**



Compagnons students training in decorative concrete.

A silane-modified protective "guard" product, or sealer, is applied to a polished concrete floor. Many sealer options are available for decorative concrete applications, including acrylics, epoxies, polyurethanes, polyaspartics and polyureas.

Photo courtesy of Prosoco

# THE RIGHT CHEMISTRY

## Sizing up coatings for horizontal concrete surfaces

*by Joe Maty*

All decorative concrete work needs to be protected.

"But protected from what?" asks Shawn Wardall of Specialized Construction Services Inc. in Waterloo, Wisconsin.

It's a crucial question regarding coatings for horizontal concrete installations and restorations — whether the coating is serving a protective-only mission or protective-decorative function.

"Penetrating sealers leave a very nice natural look and offer a certain level of protection, but a coating will almost always offer a greater level of protection," Wardall says. "But is it chemical resistant enough? How much will it amber (take on a yellowish tint)? What level of maintenance is required to maintain the desired look?"

Matt Blackburn, a regional sales manager for coatings manufacturer Key Resin Co., says the key to specifying or choosing a coating typically boils down to three variables: budget, time and quality.

Expanding on these fundamentals, Westcoat Specialty Coating Systems' Todd Cook says the factors to be considered in specifying coatings for decorative concrete begin with the space and environment.

"Substrate conditions, expected use of the space, and how the inhabitants will interact with the environment all play an important role when it comes to specifying these finishes," says Cook, Westcoat technical sales representative.

### Our experts

*Concrete Decor* contacted the following coatings experts, formulators and suppliers to help shed some light on the coating choices available today for interior and exterior floors and other horizontal concrete surfaces:

**Matt Blackburn**
*Midwest region sales manager*
Key Resin Co.

**Todd Cook**
*Technical sales representative*
Westcoat

**Daniel Owen**
*President*
Arizona Polymer Flooring

**Steven Reinstadtler**
*Market manager for construction coatings*
Covestro LLC

**Kevin Sigourney**
*Consolideck product manager*
Prosoco

Specific issues to take into account include the type of traffic (vehicular, foot, forklift, other), the expected UV exposure, VOC or LEED considerations, skid resistance, potential chemical or water exposure, local building and health codes, and waterproofing requirements, just to name a few.

"Let's say an architect is trying to specify stained concrete for an office TI (tenant improvement) project. One of the first considerations should be the substrate. Is the existing substrate suitable to stain and seal or to stain and polish?" Cook asks.

Existing floor finishes, such as carpet or tile, may result in potential imperfections in the slab and may yield an appealing rustic look. Then again, these imperfections may not fit with the overall design, and a cementitious overlay may provide a more uniform canvas before stains and sealers or topcoats can be applied, he says.

As for anticipated use of the space, Cook cites a brewery as a good example. "Brewery floors are exposed to a lot of harsh conditions that can result in a coating failure if the proper solution isn't specified," he says. Epoxies have long been a standard material for such facilities, but urethane cements have emerged as a formidable alternative due to a combination of resistance to moisture, thermal shock, heat and impact.

Needless to say, aesthetics also figures resistance muscle is paramount.

"Do they need slip resistance or is easy cleaning more important?" he asks. "Is thermal shock an issue? We have a couple of urethane mortar jobs we did because they planned on using very hot water to clean a cold surface and epoxy doesn't do well with that.

"Is it a custom art piece or something that needs to be duplicated consistently?" he continues. Artistic freedom on one project may contrast with a specification for precise uniformity on another.

In other words, ask a lot of questions, Hanneman says. "Make sure a transcript of your side of the conversation contains at least twice as many question marks as periods."

Adding to the challenge of choosing materials is the constant evolution of coatings, often as a result of regulatory mandates. For example, "I used to be able to use a moisture-cured urethane that I never had a complaint about other than the smell when applied. But government regulation has rendered that coating obsolete," Wardall says.

"Unfortunately, there is no perfect solution. There is no bucket of magic. We simply have to do the best we can to keep educated on what is available, and communicate with our clients."

## Mixing and matching:
### Align the coating with project objectives

THE diverse array of coating technologies gives specifiers and users plenty of choices. How, then, to proceed?

"Coating materials have differing effects on decorative concrete," says Matt Blackburn of Key Resin Co. In addition to cost and performance quality, he strongly suggests "contractors test the wetting effects of each coating they are interested in using in conjunction with their preferred decorative concrete substrate. Coatings can wet out substrates at different speeds and enrich colors in different ways."

Shawn Wardall of Specialized Construction Services adds another important consideration to Blackburn's list of quality, time and budget: The client's expectations.

"What makes this difficult is that most often, they don't know," Wardall says. "I spend a lot of time educating my clients to make it easier for them to answer this question. To begin the process, you have to first listen well to what they think they want. I often feel like a pharmacist listing out the pros and cons of each solution."

For example, he says, "This last summer we completed the floors in a salt-float facility where the designer had shared with us some pictures of a stained floor," downloaded from the Internet, "and wanted that look."

The specification called for polished concrete, "but due to the corrosive nature of salt and the potential of slip and fall issues, we completed this floor using a metallic epoxy with a urethane topcoat. A slip-resistant additive should always be used on a floor like this, so we added what we typically use on garage floors. Unlike our previous customers, right away we had complaints that the floor was slippery."

Being a bit perplexed by the claim, Wardall says he had the floor tested and learned that salt water is more slippery than regular water. "So we increased the small texture agent in a final topcoat and have had no further complaints."

The take-away? Listening to how the customer wants the floor to look and zeroing in on the technology used to deliver it provides a starting point for discussion. However, choosing the correct method and materials may deviate significantly from initial concepts.

Cory Hanneman of Element 7 Concrete Design Inc. in Granite Shoals, Texas, says stained and polished installations are his bread and butter, but coatings come into play when chemical-

Photo courtesy of Key Resin Co.

A metallic epoxy coating produced the rich, deep tone of this floor treatment. A polyaspartic with a fine, nonskid additive was used as the floor's topcoat. It was also used to create the splashes of color.

prominently in coating selections. A desired palette may limit the type of material that can be used. Acid stains, for example, are a proven and durable solution for staining concrete but come in limited colors. Sheen may also be limited by the medium or material used.

"This is where it's crucial that architects and specifiers make use of the manufacturer's architectural representatives," Cook says, and get an on-site mock-up to illustrate the actual finished result.

Here's a rundown of the various coatings on the market today:

## The coatings mix

Coatings specifiers and users can choose from a varied mix of products for concrete floors and other horizontal concrete surfaces, from clear sealers that protect the decorative surface while essentially going unnoticed, to colorful, glossy and special-effect finishes that enhance powerful design statements while boosting durability.

**Acrylics.** Acrylic sealers are a widely used and economical option for horizontal concrete, and are available in a range of solids-content levels and in water- and solvent-borne versions. These materials work well as a low-cost, utilitarian coating choice, but frequent recoating is often needed.

Fast-drying acrylic lacquer-type sealers are billed as easy to apply, single-component products that can be used directly on concrete. Attributes include high gloss and a degree of UV and stain resistance, and a finish that can be easily recoated and maintained.

Solvent-borne acrylics can be used on interior and exterior settings, and are a common choice for residential interiors, patios and pool decks. Performance limitations outside can include premature loss of gloss and occasional whitening from water.

Water-borne, low-VOC acrylic sealers are used where environmental impact is a major concern, but are rarely considered for commercial projects. They don't adhere to concrete as well as solvent-borne sealers and they don't enhance color.

Some acrylic sealers are modified with slow-evaporating solvents to improve application and performance. Others have silane added to boost water and efflorescence resistance.

**Epoxies.** A major player in the concrete floor coatings arena, epoxies come in water-borne, solvent-borne and 100-percent solids forms, and are typically multicomponent systems — bisphenol A resins combined when applied with polyamide or polyamine curing agents. These high-performance coatings deliver good abrasion resistance and a high degree of chemical resistance.

Polyamide epoxy coatings, used more frequently on concrete floors, are more flexible and water resistant, while amine-cured epoxies are superior in chemical resistance.

Water-borne epoxies, a performance upgrade from acrylics, are very user friendly. They are typically used on the interior, but on the exterior can be used as a primer under a urethane topcoat. These epoxies are more durable and chemical resistant than acrylics, but many are susceptible over time to amber with UV exposure.

For decorative concrete, two-component water-borne epoxies are popular for interior sealer/topcoat applications because they're versatile and perform well. They also can be used as primers. These user-friendly coatings have a long pot life and dry rapidly. They're available in varying gloss levels in clear or pigmented formulations.

Photo courtesy of Westcoat Specialty Coating Systems

A high-build self-leveling urethane coating is the choice for this floor application. The material offers a high degree of resistance to chemicals, heat and steam, and is used for breweries, commercial kitchens and other service areas.

Also in the epoxy category, high-build, 100-percent solids are the basis for decorative quartz and color-chip systems, and as clear epoxy finishes for various decorative concrete interior floors. Key properties include 100-percent solids formulation, superior clarity and high build. A polyurethane topcoat can boost their scrub, stain and scratch resistance.

Epoxy novolac products are characteristically similar to 100-percent solids epoxies, but they're more heat and chemical resistant — a key attribute in areas such as commercial kitchens, warehouses and manufacturing plants where there are high temperatures or exposure to chemicals and cleaners.

These high-build coatings, typically applied at 20 mils or greater, come clear or pigmented. They cure very quickly and may require specialized application equipment. Extensive surface preparation, such as roughening the surface, is usually required.

**Polyurethanes.** Polyurethanes for concrete are multicomponent, high-performance materials formed by the reaction of a polyisocyanate and hydroxyl-containing resin blend. Available as solvent and water-borne coatings, they are highly abrasion and chemical resistant. Polyurethanes are widely used premium coatings, and carry a price tag that reflects this reputation.

Polyurethanes are usually applied to a roughened concrete surface with conventional sprayers in one or two coats at a few mils per coat and cure within several hours. They also are used as topcoats over epoxy coatings in projects exposed to sunlight and other weather.

Single-component, moisture-cured polyurethanes are designed to react with moisture to produce a tough, durable film. These one-component resins can be an advantage when handling and applying because less equipment is needed.

Polyurethanes that deliver higher film builds come in high-solids or 100-percent solids formulas and are used in demanding settings where chemical resistance is a must. As with high-build epoxies, you must abrade or roughen the surface before applying these coatings, usually with specialized equipment.

Today's manufacturers have developed extremely versatile interior and exterior polyurethane products that can be applied

## Polyaspartics: Paint on steroids?

The label "paint on steroids" has been attached to polyaspartic coatings due to the technology's claims of high-build, fast-cure concrete floor coatings that promise gloss, low-VOC content, film toughness and long-term durability.

Initially used in heavy-duty, industrial and transportation settings such as bridges, water/wastewater plants and other demanding environments, polyaspartic coatings are staking a claim in the commercial and architectural marketplace as well.

There shouldn't be any mystery as to why: they have a strong performance profile and aesthetically they make colors "pop" on stained concrete floors.

Another big selling point for the technology is rapid turnaround, as a result of rapid cure and high film build — one coat delivers the performance equivalent to two coats of conventional polyurethane coatings, marketers say.

Catalyzed by wish lists from the coatings-user community, recent advances in polyaspartic technology have produced lower-VOC, lower-odor materials also designed to provide an optimal balance of adequate working time with quick-end cure.

Steven Reinstadtler, market manager of construction coatings for Covestro LLC, says these advances were the objective of polyaspartic resin R&D aimed at reducing viscosity to promote higher solids content with greatly reduced solvent and plasticizer levels. These outcomes resulted in ultra-low VOC content and solids content at 95 percent and higher. An extended pot-life without reducing cure time was also achieved. Plus, research produced a product that can be blended with existing polyaspartic resins to tailor cure speeds to fit specific project situations.

This recent polyaspartic resin development program also resulted in enhanced cured-film flexibility for improved impact resistance, Reinstadtler says.

Covestro, formerly Bayer MaterialScience, is a major developer and marketer of polyaspartic coatings materials and technology. Targeted uses for the new polyaspartic coatings are topcoats for industrial flooring, clear topcoats for decorative/stamped concrete and resinous binder systems for aggregate flooring.

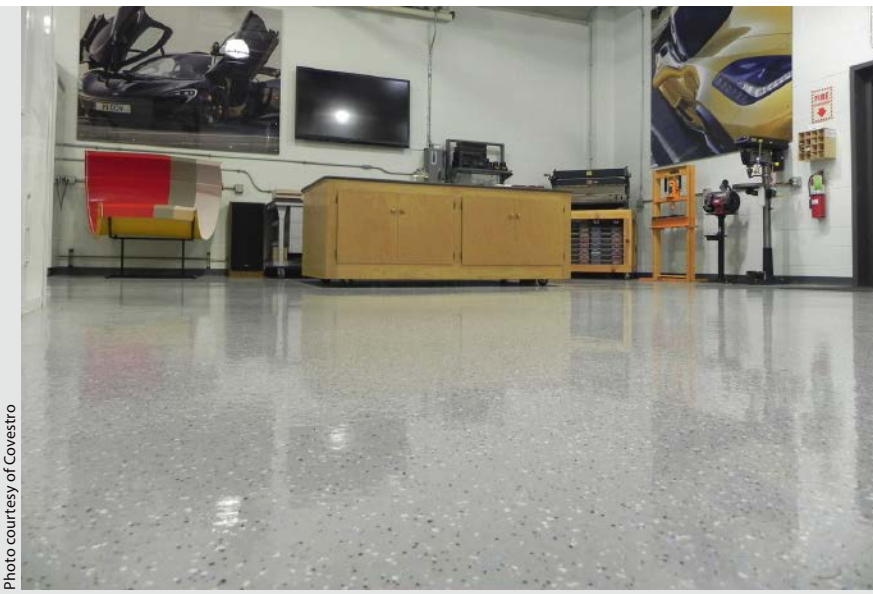


Photo courtesy of Covestro

Polyaspartic coatings, originally used in heavy-duty industrial and transportation applications, are being used as topcoats for industrial flooring, clear topcoats for decorative concrete and resinous binder systems for aggregate flooring. One-coat capability is cited as a major plus.

Polyaspartic coatings, first introduced in the 1990s, are based on the reaction of an aliphatic polyisocyanate and a polyaspartic ester, which is an aliphatic diamine.

The name polyaspartics has been used to differentiate these polymers from polyureas and polyurethanes, Reinstadtler says. Although they are classified as a pure polyurea, polyaspartic coatings are very different in both application and performance properties from conventional polyureas, in that they allow the formulator to control the rate of reaction and cure, and pot life, of the two-component mixture. Pot life can range from 5 minutes to 2 hours.

directly to concrete or used as a topcoat over epoxies or as a protective finish for microtoppings and overlays. Available as clear or pigmented VOC-compliant coatings, these polyurethanes are highly resistant to UV rays and abrasion.

Solvent-borne, two-component polyurethanes deliver long-term durability with their UV, chemical and stain resistance. They are well suited for commercial or industrial settings with extensive foot and vehicular traffic. However, these products are highly flammable and have a strong odor, which make them problematic for restaurants, retail spaces and institutional facilities that must remain open during maintenance and renovation.

Water-based polyurethanes, which come in a variety of gloss levels for interior and exterior applications, perform comparably to solvent-borne products but are low odor and nonflammable. These benefits make water-bornes a popular choice where other trades or tenants are present, or in settings where minimal odor is a must.

As with solvent-bornes, application versatility is part of the package, as they can be used over epoxies and cementitious treatments, as well as applied directly to concrete. Rapid dry time is another plus.

Photo courtesy of Arizona Polymer Flooring

Here, the intense colors and shimmering surface were produced with a system composed of cementitious microtopping, water-based dye and two sealers — an acrylic-polyurethane and an aliphatic polyurethane.

**Polyaspartics.** Based on a reaction of an aliphatic polyisocyanate and a polyaspartic ester, high-performance polyaspartic coatings boast a similar profile to polyurethanes in terms of the cured film's durability and toughness, but they cure more rapidly. These high-build materials can be used like epoxies.

Polyaspartics are marketed as a one-coating product that provides the performance of a two-coat system.

**Polyureas.** Polyureas are mainly used as heavy-duty protective coating systems for demanding applications such as those associated with transportation, pipeline, tank linings, marine, wastewater treatment, truck bed linings and parking decks. Architectural and decorative uses are limited, partly because of their extremely rapid cure time.

Polyureas, however, can be modified for decorative applications by blending them with other resins such as polyaspartics to slow down their ultra-fast cure time.

These two-component, fast-cure modified polyureas are UV, chemical and abrasion resistant; high-build; durable; and available clear and pigmented. They offer a quick-dry and low-odor alternative to epoxies or as a topcoat/sealer for epoxy systems.

Modified polyureas are suitable for interior and exterior uses. These low-viscosity materials produce a high-gloss finish, and are offered in formulations tailored for use as topcoats in protective-coatings and seamless-flooring installations.

These coatings can be used as finish coats in color-chip and color-quartz decorative flooring and other architectural concrete applications. Although characterized by rapid cure, some polyureas are formulated to cure slowly enough to allow effective brush and roller application. Also offered are primer/topcoat products used in decorative color-chip systems that can be applied in one day.

Photo courtesy of Westcoat Specialty Coating Systems

A polymer-modified cementitious coating with acrylic topcoat is a viable option for resurfacing and enhancing existing concrete. This type of coating system can produce a smooth or textured finish, and simulate tile, flagstone, slate and other surfaces.

## Polished concrete sealers

Sealers, or "guards," for polished concrete add protection against stains and chemicals that could adversely affect the ground, densified and polished surface. Application of a guard is particularly important in polished concrete colored with stains or dyes.

Guards can be reapplied or reburnished in areas of heavy traffic without having to strip the sealer. They also can enhance the polished surface's shine.

Many manufacturers of coatings and polished concrete systems offer sealer/guard products. Formulas include acrylics, proprietary acrylic copolymers modified with silicate hardeners (densifiers), polyurethanes, water- and solvent-based methacrylates, acrylic/wax and polyurethane/wax combinations, other proprietary polymer blends and the relatively recent arrival — UV-cured clear sealers.

Also used on polished concrete are various penetrating repellents — nonfilm-forming materials such as those based on silanes. These "penetrants" repel water and other liquid substances but are "breathable" in that they don't trap moisture in the substrate and allow water vapor to escape.


Photo courtesy of Prosoco

A proprietary acrylic copolymer modified with a silicate hardener was applied as a sealer, or "guard," on this polished concrete floor.

- **www.apfepoxy.com**
- **www.covestro.com**
- **www.element7concrete.com**
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Photo courtesy of Proline Concrete Tools

# Concrete contractors enjoy a resurgence of requests

*by K. Schipper*

There's good news on the horizon: With the housing market in recovery, business is definitely looking up for concrete contractors involved with stamping and texturing.

However, it isn't just the residential outdoor market that's driving stamping. Thanks to its low price compared with other outdoor decor options, it's topping the lists of more commercial developers and government contractors.

Most manufacturers haven't made significant changes to their existing technologies. Still, colors and looks are evolving, and one firm — Oceanside, California-based Proline Concrete Tools — says (at press time) it will launch what it feels is a major revolution in mat construction starting with this year's World of Concrete show.

## A boom market

Manufacturers and contractors alike feel the market for stamped and textured concrete has recovered nicely from the country's recent recession, and some say it's booming.

"It's definitely strong around Indianapolis," says Steve VandeWater, whose employer, Sagamore Ready Mix, is based in Fishers, Indiana. "This past year was by far the busiest year ever. Every

Photo courtesy of Stamped Artistry

Robert Salinas of Stamped Artistry says his most popular stamp pattern is called Yorkstone. The stamp set comprises eight individual pieces than range from 8-by-8 inches to 24-by-48 inches. "They modulate in any fashion, no matter how the pattern is laid out," he says.

contractor I talked to was just swamped with work, and they're already getting work lined up for this spring."

"It comes and goes, but basically we've seen a moderate increase in the use of stamps," says Tim Frazier, trainer and tech supervisor for The Stamp Store in Oklahoma City. "It's a combination of growing residential sales and people understanding how stamped concrete can work for them."

Kelly Paxton, a customer service specialist for the Ontario, California-based Matcrete Decorative Concrete Products, says she's seeing interest going well beyond homeowners redoing their patios. "We're seeing it in commercial developments," she says. "People want to have something that gives a bit more of a personal touch, even in a commercial environment. We're also seeing it in theme parks."

Cameron Morgan, owner of Pacific Concrete Images in Laguna Hills, California, agrees. He says shopping center and mall owners are looking for different types of decor, and stamped concrete is a very cost-effective way to spice up a project's look. In particular, there's more demand for custom-made deep colors, including blue and yellow, for the patterns.

"One was for an Anaheim (California) project where they were doing the image of a river, with brown on the sides to show the banks," he says. "Another was for Universal Studios with a water feature."

Another popular item both Morgan and Paxton list is animal track imprints, which Paxton describes as, "a little accessory, a finishing touch" for things such as patios. Although most contractors deal with white-tailed deer or coyote tracks, custom tracks have been ordered from both Matcrete and

Photo courtesy of Pacific Concrete Images

Pacific Concrete for national parks and the San Diego Zoo.

However, Morgan concedes his personal favorite is fossil imprints.

"For a couple of schools, we suggested at the bottom of the playground sandbox that they put in concrete and stamp it with some fossils," Morgan says. "It's great for the kids because they can excavate and find fossils at the bottom of the sandbox."

### Bigger, more colorful

While deep colors have found favor in some specialty projects, wood grains also gained ground in 2015. It's just another example of stamped concrete's ability to imitate and simulate natural products, says Robert Salinas of Stamped Artistry in Pasadena, Texas.

"Right now, faux wood is definitely a big thing," Salinas says. In late 2015, "We did a training seminar in our parking lot, and when we did an overlay with the wood pattern, everybody went, 'Wow.'"

In addition to wood, there's been a big demand (literally) for mats that mimic larger stones and tiles, notes Tyler Irwin, Proline's national sales manager.

"If you go to a tile or natural stone store, you can't find anything that's less than 16-by-16 inches," he says. But, typically mat patterns are 12-by-12 or 14-by-14. So, "Over the last two or three years, we've been addressing that by creating new (tile and random stone) designs that have giant stones in them."

Paxton says Matcrete also recognizes that trend, but it has its place. The larger designs are great for expansive spaces, he notes, but "If you have a small walkway, you want to see the pattern. You're going to go with something that's tighter and more traditional."

With its focus on larger stone patterns, Proline will soon release a seamless stamp that overlaps itself and creates its own pattern. The company unveiled it as a concept at last year's World of Concrete and has had prototypes out for several months.

"It will allow a person to stamp a pattern with the same ease as stamping a texture," Irwin says. "Because they're seamless mats, we're able to make them bigger, and that allows us to put some bigger stones inside the mat."

He compares the way the joints line up to spoons nesting in a silverware drawer, and explains that magnet technology allows the mats to align perfectly with each other. The mats themselves will also be dual density so installers can get on the concrete a bit earlier.

In fact, Irwin says, Proline is confident that installers will be able to stamp a pattern with the same level of expertise it's taken to use a seamless skin, making the process easier and requiring less skill than in the past.

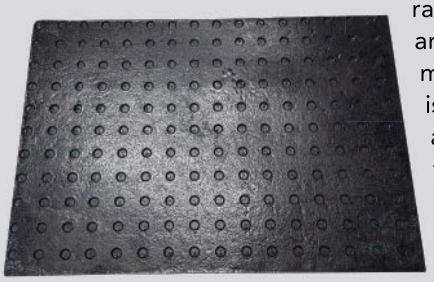
### Still the basics

Regardless of what sort of a job you're doing, manufacturers and contractors say the basics remain the same: You still need enough mats or skins to cover the width of

## Stamp is ADA compliant

*by K. Schipper*

For many people, the federal Americans with Disabilities Act is so last century. P. Michael Fennessy, owner of Stampcrete International Ltd. In Liverpool, New York, isn't among them, though. He holds two patents on a stampable concrete dome design that lets the blind and visually impaired navigate sidewalks and transit platforms.



The problem: "I see where some building departments and states take it seriously and enforce it. But, I've seen a lot of new construction where I don't see this at all and I wonder how they're getting away with it," he says.

ADA was signed into law by former President George H.W. Bush in 1990, and among its many provisions is a guarantee of equal access to public facilities. The following year, Fennessy says, Chicago Mayor Richard Daley contacted him and asked if he could make a stamp that would create a detectable warning, meeting the specifications of the law.

"I remember I said to him, 'Why me? I'm not the big guy on the block,'" Fennessy says. "He said to me, 'Because your competitors say it's impossible.'"

However, Fennessy says he understood their reluctance once he got into the process. He hired a machine shop in Syracuse, New York, to mill a 2-by-4-foot aluminum plate to the precise measurements required, plus an additional 1/64 inch "to allow for the urethane shrinkage."

The design was accepted by both the federal accessibility board and the Chicago mayor's office, which was pleased the work could be done for as little as $10 to $15 per curb cut. Fennessy patented his design, and says his only real competitor was another company with a much more costly composite design.

Better mousetrap or not, Fennessy ran into a problem with an accessibility board member over the issue of wheelchair access. As a result, the part of the regulation requiring a tactile warning for the visually impaired was put on hold for almost a decade. When it was reintroduced, it required the domes to be in rows, rather than on a diagonal.

Fennessy filed a second patent with the new design, but he says the new regulation, "didn't have any teeth in it," and so sales of the stamps have languished.

"I bet we don't sell more than 30 to 50 a year, and it's sporadic," he says. "It's usually when somebody has a new housing development and they may have 400 to 500 curb ramps to install. Then, it becomes a budgetary issue."

In the meantime, Fennessy has also developed a way to retrofit existing curbs with a high-strength cementitious material and a liquid release agent, but he says none of it is generating much money.

"I just don't believe the federal agencies are out there politicking like they did when it first came out," he concludes.

your job in one pass.

"That's the old rule of thumb," says Bob Harris, a consultant with the Waxahachie, Texas, office of Structural Services Inc. "At a minimum you need to have enough tools to span the widest area you're stamping plus an additional two tools. A common mistake of newbies is tackling too big a project without the appropriate amount of tools, and then the concrete sets too quickly."

"If you're working with texture skins, you need at least two," says Sagamore's VandeWater, and typically four to six tools if you're stamping.

The Stamp Store's Frazier says with his company's stamp rental program, it typically sends out two 5-by-5-foot mats, a 3-by-3-foot mat and two 2-by-2-foot mats for a seamless texture job.

"A lot depends on the experience level of the applicator and how big the project is," Frazier says. "The more area you're stamping, the more coverage you want to get so you're not slowing down."

Other must-haves include concrete finishing tools, roller wheels to match the squeeze marks between stamps, chisels and a tamper or two. Stamped Artistry's Salinas stresses the importance of tamping tools made for concrete stamping.

"I've seen some guys use dirt tampers they get at the big box stores," he says. "That's not good because they're made out of metal and they'll cut into your stamps."

## Stocking your tool box

When tool shopping, Harris advises checking out a manufacturer's track record, particularly the level of support offered if there's a problem with a tool.

"The goal when stamping concrete is to replicate something like stone or brick," Harris says. "Look for a tool that's going to produce the most realistic look once the project is completed."

Salinas says in choosing tools, so much of it depends on what you're comfortable with and what works best for you.

"If you're buying online and you're getting something for a really cheap price or it seems a lot cheaper than brand-name tools, I'd think twice," VandeWater says. You often get what you pay for, he adds, which is why it can pay to stick with reputable companies known in the industry.

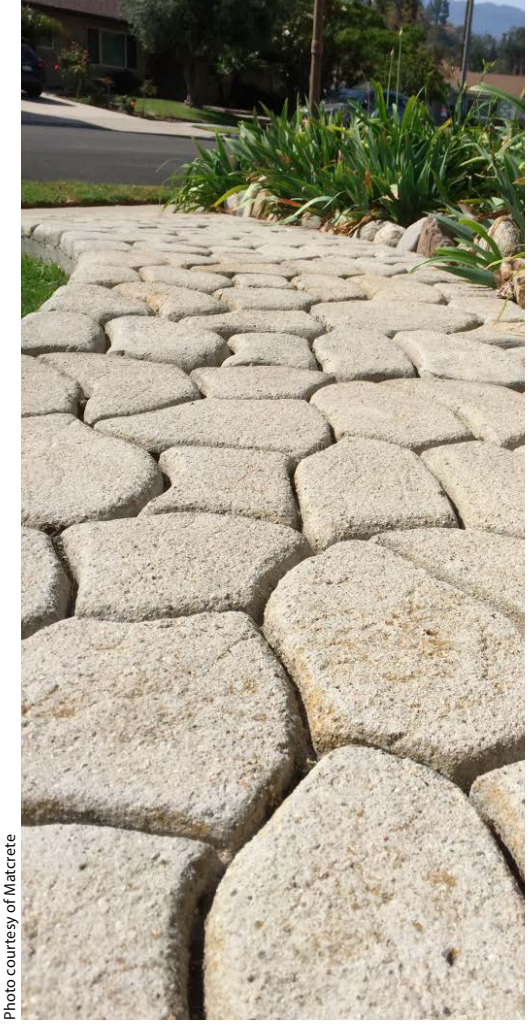


Photo courtesy of Matcrete

# It's All About Friction

*by Chris Sullivan*

I TYPICALLY try to avoid writing on the same subject within three years because there's more than enough "fresh" material concerning decorative concrete to address. But, certain subjects come up more often and warrant a refresher or update.

Slip and fall protection, and how it relates to sealers and coatings, is one of those subjects. I don't have a question to answer this time; I have a topic to address. This piece is more about defining slipperiness and the testing methods used to evaluate the slipperiness of sealers and coatings.

The issue of slip and fall within our industry, and in general, is very relevant to anyone installing sealers or coatings and warrants extra attention. According to the U.S. Department of Labor's Occupational Safety & Health Administration (OSHA), "Slips, trips and falls account for 15 percent of all accidental deaths, and are second only to motor vehicles as a cause of fatalities," notes Don Ostrander, CSP, director of consulting services occupational safety and health at the National Safety Council in Itasca, Illinois. In 2014, there were 822 occupational deaths due to falls.

That relevance holds true for both commercial and residential work. In fact, I find most of the questions and complaints I get on the subject come from homeowners or owners of small commercial projects who had stamped or stained concrete where the sealer is slippery. Larger commercial projects tend to go through a designer or architect that looks for ADA and OSHA compliance when specifying sealers and coatings. When you think about it, this makes sense since architects' reputations and bank accounts are on the line if they are found negligent for a product they specified that led to a slip and fall issue.


Photo courtesy of Chris Sullivan

Textured, rubber-soled boots produce a much higher coefficient of friction than slick, well-worn soles.

I find residential and small commercial installations have gotten better at educating owners and/or taking steps to reduce slip issues, but far more can and should be done. In researching this article, I was surprised at the annual cost of slip and fall injuries. According to the 2006 Liberty Mutual Workplace Safety Index, the annual direct cost of disabling occupational injuries due to slips, trips and falls is estimated to exceed $11 billion. When you do the math that works out to a $31 million-per-day problem.

## Defining coefficient

Now that we have some numbers, let's look at the mechanism behind the problem as it relates to our industry. Slips and falls are actually two very different things. When you slip, you lose your balance and slide on a floor. When you fall, you move from one level to another. When talking about decorative concrete sealers, we deal with slips, not falls. The mechanism behind slips all comes down to friction, more specifically the coefficient of friction (CoF).

By definition, CoF is a value that shows the relationship of the force of friction between two objects and the normal force between the objects. To simplify, you get a number that shows the difference in friction between two objects (foot and floor) when standing still as compared to moving past each other.

The value ranges from 0 to 1. A value of 0 means no friction: Two objects slide very easily past each other. A value of 1 means lots of friction: Two objects don't move easily past each other. As a side note, a value of 0 is theoretical, as all objects that touch exert some friction force upon each other.

Let's see how this relates to the real world. When I walk across an icy parking lot with my 25-year-old, well-worn-leather cowboy boots I produce a very low coefficient of friction and run a high risk of ending up on my back. In contrast, when my much smarter wife walks across the same icy parking lot with her textured, rubber-soled Ugg Boots, she produces a much higher coefficient of friction and easily walks by me as I lay on my back in pain. Of course this is an oversimplified example, and there are many other factors, like mass and speed of the objects that contribute to the coefficient number, but you get the idea.

When it comes to testing and standards, there are no mandatory standards for CoF! There are recommendations and accepted values, but nowhere does the government state the CoF has to be a certain value for a certain flooring application. OSHA's "General Requirements for Walking and Working Surfaces" state the recommendations for static CoF. OSHA standards for flooring roughness are not mandatory and are based upon a study done by the University of Michigan and reported in "Work Surface Friction: Definitions, Laboratory and Field Measurements, and a Comprehensive Bibliography."

The generally accepted standard from OSHA is 0.5, while the Americans with Disabilities Act (ADA) recommends the CoF be raised to 0.6, but that remains a suggestion, not a law. Keep in mind that having CoF values too high also can pose a safety issue.

## Turn to ASTM and ANSI tests

A 2003 report by the Society for Protective Coatings states that flooring with a high static coefficient of friction (SCoF), 0.8 to 1.0, is actually more of a slip and fall hazard because the roughness of the surface can catch the sole of footwear and cause the person walking on the surface to trip and fall. This means that the target value for CoF is between 0.5 and 0.8 — not a very big window.

Another factor to consider is there are two types of CoF. Static CoF is the value generated when an object starts moving (starts walking from standing still), where dynamic or kinetic CoF is the value generated when two objects in contact are moving past each other (walking across a surface).

How are CoF values and recommendations determined? Many machines have been created to measure it. Testing companies use these machines' results to create recommendations and standards that other agencies follow. ASTM and ANSI are the most recognized testing companies, and many government regulations are based upon their standards.

ASTM and ANSI are international standards organizations that develop and publish technical standards for various items. Four types of ASTM tests and one type of ASNI test are done for flooring: ASTM 1679, ASTM E303, ASTM D2047, ASTM F1677 and ANSI A137.1 which replaced ASTM C1028. Space won't allow me to outline each test in detail, but when it comes to slip issues concerning sealers and coatings for decorative concrete, I recommend using products that meet ASTM 1679 or ANSI A137.1. Both tests are designed to generate a static and dynamic CoF value for almost all surface types, as well as wet or dry, flat or incline.

Visit the ASTM and ANSI websites for more information. It's important to note that many sealers and coatings meet the recommended CoF value when dry, but do not when wet. This is usually remedied by adding one of the many grit additives on the market to the sealer being applied. For more on that, visit bit.ly/1mTNZvA to read the *Concrete Decor* April 2014 article titled, "How Can You Minimize Sealer Slipperiness?"

*Chris Sullivan is vice president of sales and marketing with ChemSystems Inc. He has led seminars and product demonstrations throughout North America. Chris was inducted into the Decorative Concrete Hall of Fame at the 2015 Concrete Decor Show. Reach him at questions@concretedecor.net.*

# Coat or No Coat?

## Proper sealers and maintenance plans can make or break a polished floor

*by Clif Rawlings*

From huge industrial manufacturing plants and nationwide retail stores to restaurants and residences across the country, polished concrete has become a very popular flooring option over the last decade. Some say it's grown too fast and now we're beginning to experience growing pains as we learn more about this flooring alternative.

Polished concrete is very young in comparison to other popular mainstream flooring options such as carpet, engineered wood flooring, vinyl composition tiles and quarried stone. Whereas polished concrete has been used in the mainstream as a viable flooring system for only about 15 years, it's still in the infancy stage as we discover what works and doesn't work in different environments.

With concrete being the No. 1 building material in the world, it makes sense why polished concrete has taken off. Let's not forget that polished concrete naturally and inherently contributes toward achieving certification for most types of construction projects under the LEED green building rating system developed by the U.S. Green Building Council.

Photo courtesy of Ameripolish

Foot traffic patterns in the middle of this aisle show where the semi-topical sealer has worn off in a short time.

### Guarding against stains

By now most people are aware of the advantages of polished concrete compared to other flooring options. Some of the pros are high durability, low maintenance, cost effectiveness, long life span and endless design options. The biggest con would be that it can stain or chemically etch fairly easily if spills are not cleaned up in a timely manner.

To correct staining issues, one of the most popular options is to apply a coating. But a high-solids coating won't adhere well to a polished concrete surface. Plus, a topical coating defeats the purpose of going to all the trouble of grinding, densifying, honing and polishing the concrete to achieve a highly durable and abrasive-resistant surface.

And then there's moisture drive to consider. Since topical coatings are known to fail when there is moisture drive in a concrete slab, a semi-topical coating was developed for the polished concrete industry. Often referred to as a "guard," this type of product is usually made of some combination of diluted densifier and acrylic/co-polymer in a water-based formula.

Guards or semi-topical coatings do a fairly good job at protecting the polished concrete slab from easily staining or etching. They also do a nice job of slightly filling in some of the micro pores and fissures in the surface. As a result, they give the already shiny polished concrete floor an additional bump in gloss after burnishing as well as enhance any dye or integral color if used. For these reasons semi-topical stain protection products took off rather quickly and became the norm for polished concrete surfaces.

### Semi-topicals and the need to reapply

After about five years of using semi-topical stain protection products in high-traffic retail stores and industrial manufacturing plants, it became obvious this may not have been the best option for all environments with polished concrete floors. Foot and wheel traffic has proven over the years to be equivalent to about a 200- to 400-grit abrasive. Semi-topical coatings are nowhere near as abrasion resistant as the polished and densified concrete they are applied to, so they wear off rather quickly.

Because of this the frequency of the reapplication of the product is much more often than what floor owners were expecting. In some of the main aisles and entryways they are having to reapply the semi-topical protection products as often as every three months. In the lower traffic aisles and areas, they must reapply about every five months.

Many chemical manufacturers even developed specific cleaners that contained trace amounts of the co-polymers to help reapply the semi-topical sealer in an effort to prolong the inevitable reapplication of the guard products. Unfortunately, all the efforts were to no avail. Some national retailers

have even considered going back to VCTs as the reapplication of the semi-topical sealer is not that far off from the old "strip and wax" game they used to play with them. Storeowners started asking for other ways to protect their polished concrete floors.

## Advantages of penetrating sealers

Now comes the introduction — actually more like a re-introduction — of penetrating sealers. In the early stages of concrete polishing, companies used penetrating sealers borrowed from the natural stone industry. They provided decent stain repellency but the technology was designed more for granite, marble and travertine than concrete.

Although concrete has similar properties found in some reactive metamorphic natural stones such as marble, or sedimentary rocks like limestone and travertine, its crystalline structure and percentages of reactive properties can be very different.

With the advancement in technologies, there are now penetrating sealers that have the same hydrophobic and oil-phobic repellency properties as silane/siloxane sealers but without the airborne dangers that normally come with them. Silane/siloxane sealers are considered a carcinogen when they become airborne when atomized with a pump sprayer or from high-speed burnishing. Some of the new penetrating sealers are safe to atomize and burnish and they come in solvent- or water-based carriers.

When using a penetrating sealer, nothing like a "guard" or semi-topical sealer remains on the concrete surface. So foot and wheel traffic make contact with the polished, densified and hardened concrete surface rather than a softer acrylic, semi-penetrating guard product. Not only will the concrete wear better and longer than an acrylic guard, but now polishing abrasive maintenance pads can come in contact with the actual surface of the polished concrete. This allows the pads to do their job and keep the visual aesthetics, which are the specular gloss and DOI (Distinctness of Image) of the floor at an acceptable level within a given time frame.

With the help of engineered cleaners chemically linked to penetrating sealers, you can now prolong reapplying the sealer to once a year in high-traffic environments. This is a substantial labor and material savings when compared to semi-topical products that must be reapplied every three months.

## A winning combination

Contractors are a very valuable and necessary part of the evolution of our industry's products because they love to play around with products and come up with their own systems. Thanks to some of them, we now have a combination or a "hybrid system." Some of our customers discovered you can apply one coat of our semi-topical sealer (3D SP Stain Protector) then high-speed burnish, followed by a coat of our penetrating sealer (SR2) and high-speed burnish.

What happens is the first application of the water-based 3D SP is mostly penetrating. With only one coat, 3D SP mostly penetrates and fills the concrete's small pores and fissures, enhancing the color and slightly bumping up the gloss and DOI. You really don't get the topical aspect of a guard-type product until after a second application where it builds on top of the first application.

Next the SR2 penetrating sealer migrates in and around where the 3D SP semi-topical product is still breathable. Now the SR2 is protecting where a stain would have gotten in, yet remains breathable. With this combo you get the best of both worlds — color enhancing with gloss and an increased DOI from the semi-topical product, along with extreme hydrophobic and oil-phobic stain repellency that a penetrating sealer provides — all in one system.


This is a cut-a-way side profile view of what both types of sealers look like in relation to the pore structure of concrete.

With this system there is very little, if anything at all, to wear off the surface of the concrete so it can be used in medium to some higher-traffic environments. Maintenance on this system is similar to the penetrating sealer-only floor, typically involving an auto scrubber with the respective abrasive pad and the cleaner linked to the penetrating sealer.

A simple water absorption test will tell you when it's time to reapply the two products again. If water penetrates easily, then it's time to reapply this hybrid system. Once a year in medium-traffic environments should be sufficient.

It's important to note the type of products and the order in which they go down. For example, Ameripolish's water-based guard must go down before the solvent-based penetrating product. If you do it the other way around, the water-based guard will be repelled and you'll wind up with a streaky and fisheye mess on the surface. Check with the manufacturer of each product to assure compatibility.

## Maintenance weighs in

I feel it's equally important to note that the abrasive pad used to maintain a polished concrete floor is just as crucial as the sealer used. For example, let's take a polished concrete floor left at a 3,000-grit dry polish. If you maintain this floor with a 3,000-grit diamond-impregnated pad wet under an auto scrubber, you'll take down the gloss and DOI in a couple of months.

Every diamond abrasive cuts more aggressively when used low-speed "wet" (like under an auto scrubber) compared to when it is used high-speed "dry" (like under a high-speed burnisher or a planetary



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grinder). So on this 3,000-grit level floor, it's best to use a 6,000-grit or higher diamond-impregnated pad or a DOI pad under the auto scrubber.

You have to evaluate the volume of traffic in a given environment and recommend the proper sealer and maintenance program based off those parameters. For example:

**High-wheeled traffic manufacturing plant or large distribution center** (typically large square footage): These facilities usually involve a gray (non-colored) polished concrete floor up to 800 grit. This floor is best suited for a penetrating sealer and maintained with the respective abrasive pad using the proper supportive cleaner in the auto scrubber. Reapply sealer once a year, preferably late fall right before winter (mostly beneficial for Northern states).

**Low foot-traffic retail store** (typically small to medium square footage): This type of customer usually wants a highly polished, vibrant and multicolored decorative floor polished up to 3,000 grit. This floor and environment is best suited for a semi-penetrating sealer like a guard-type product that enhances the color and provides additional gloss and DOI after each reapplication. Maintenance involves periodic auto scrubbing with the respective abrasive pad using the proper supportive cleaner and occasional high-speed burnishing. Customers are usually OK with more frequent reapplications as they are more concerned with the floor's aesthetics. With the low traffic, the reapplication in this environment should only be once a year.

**Medium foot traffic and some wheeled cart traffic in a retail store** (typically medium square footage): This customer is looking for that compromise between function and fashion and usually goes with a highly polished up to 1,500-grit, one-color floor. This might be a good candidate for the hybrid system mentioned earlier. With one application of the semi-topical sealer, you'll enhance the color and slightly increase the gloss and DOI. Follow that with an application of the penetrating sealer and you'll get the extreme hydrophobic and oil-phobic stain repellency. Maintenance will be with the respective abrasive pad and the proper supportive cleaner in the auto scrubber. Again, a once-a-year reapplication should be good but may require more if traffic is higher. Do a water absorption test to determine when.

Concrete polishing contractors who continually educate themselves are doing a much better job today at not only controlling the expectations of floor owners but also evaluating the environment to be polished. By suggesting the most logical level of gloss or DOI to stop at and the proper sealer and maintenance system for that specific floor, we're starting to see much happier facility owners and will continue to grow the polished concrete industry.

*Clif Rawlings, vice president of key accounts for Ameripolish, has been in the concrete polishing, natural stone and terrazzo industry for more than 16 years. For 10+ years, he instructed the HTC University training seminar. A founding and former board member of CPAA, he advocates today for decorative concrete through the CPAA Ethics Committee and participates as an educator at trade events such as the Concrete Decor Show and World of Concrete. He can be reached at crawlings@ameripolish.com.*

The Polishing Consultant

# Costing out FF/FL

## Floor flatness and levelness can severely affect polished concrete pricing

*by David Stephenson*

Floor flatness (FF) and floor levelness (FL) are measurements by which architects can hold concrete placement contractors accountable and provide a quality control level during the initial placement of concrete slabs. There is a difference between the two.

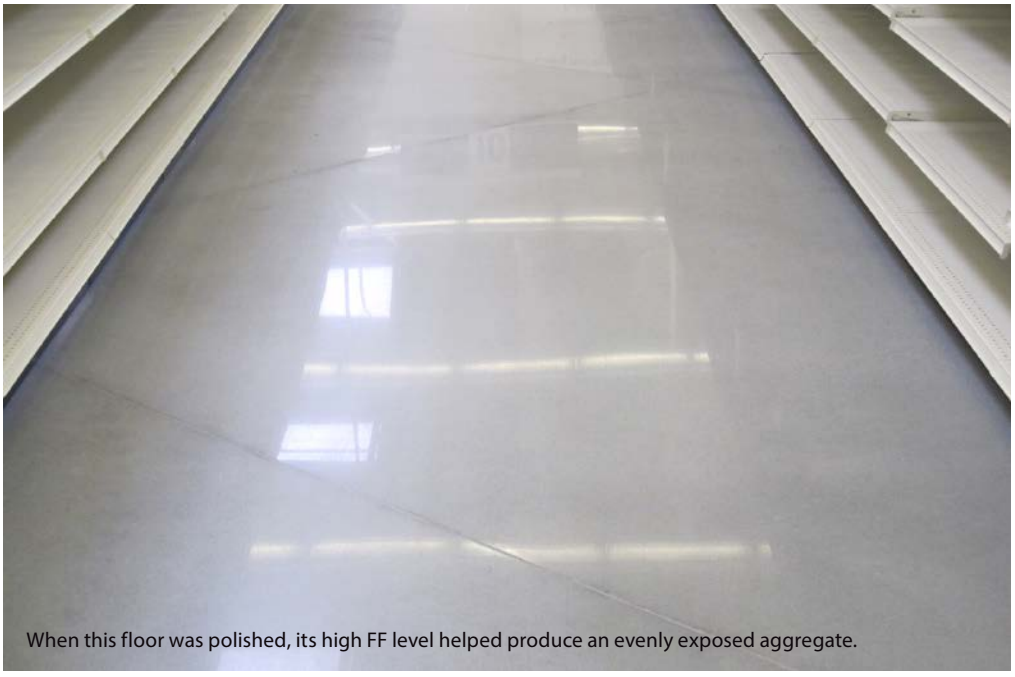
When explaining this to my customers, I often use a pool table as an example. A flat surface will provide a smooth roll but if the surface isn't flat, the balls will bump along at seams, tears or debris. If the table is flat but not level, the balls will roll smoothly but curve naturally to the lower side. This can apply to concrete slab placements as well.

You can have a very flat slab that's not level or you can have a level slab with elevation variances so the surface isn't flat. The FF/FL requirements for the project are called out in The Construction Specifications Institute's 03300 specification section on concrete placement. Almost all commercial slabs placed today have FF/FL requirements. Generally, there is a testing service that performs FF/FL testing right after placement but before saw cuts are made. This is mandated by ACI standards and the specifications for the project. I recommend you review these specifications for concrete placement on any new construction project that you work on.

### Higher and more consistent FF means better profit

As a polished concrete contractor, you should be much more concerned with the FF number than you are with the FL number. The better the FF readings are the more consistent finish you can provide your customer. The FL numbers are less important to polished concrete contractors because you can evenly grind the surface whether the slab as a whole is level or not. The FL reading is much more important for other trades like framers and roofing contractors who have to deal with the building envelope.

Low FF numbers, as was the case in this remodel, generally result in many random high and low spots highlighted by the concrete polishing process.



When this floor was polished, its high FF level helped produce an evenly exposed aggregate.

Photos courtesy of David Stephenson

I work on a lot of projects each year as the owner's rep. In some cases, the building is being built by a developer or some entity where I, as the owner's consultant, do not control the specifications. When this occurs I have seen FF numbers all over the board, with the lowest an FF 25. This extremely low number generally results in many random high and low spots highlighted by the concrete polishing process.

The highest number I generally see is an FF 70, which is considered a "super-flat" floor by ACI. These slabs generally are very uniform in the depth of grind and have a very even aggregate exposure. If you have input on the specifications, I recommend a 45 FF average or better. This generally requires the placement contractor to use a laser screed machine during the concrete placement.

If the specified or test results show the FF readings are below the 40 range, you must assume you'll use about 20 percent more diamonds during your metal bond steps. This is a result of the grinders attempting to cut off the high areas.

You also must assume you'll need to use a grout fill in some areas where larger aggregates are exposed. These aggregates trap air during the placement process, resulting in air voids when you expose the concrete to that level. You also should plan for some extra hand grinder and machine time to grind into the lower areas. Sometimes these are impossible to get to with regular grinding procedures. I also find a lot of scratches that need to be worked out as well as resin burns caused by the elevation changes during the grinding process. I routinely see change orders for low FF floors.

When you have a high FF floor you can count on reduced tooling costs and reduced labor costs because the machines will grind the floor evenly and quickly. On large "super flat" floors, contractors generally have great results and are able to make better margins even at a lower price per foot.

## Be prepared

Once the concrete is placed, it's extremely important that the polishing contractor ask for the FF/FL report as it can be an early warning sign of issues to come. If the FF/FL readings don't meet specification requirements, you can prepare for this ahead of time. That could include budgeting extra time and materials, providing the GC with a change order for the additional work and preparing the customer for the results in the finished product.

The placement contractor is responsible for providing a foundation slab. The polished concrete contractor is responsible for taking that slab and turning it into the finished floor. If customers are expecting an even aggregate monolithic finish and the end result is a randomly textured surface with light and dark areas and larger rock exposed in sections, the first person they contact to discuss their displeasure is the polishing contractor. If the customer is warned of this potential ahead of time it relieves a lot of stress, places the responsibility on the contractor that is underperforming and ensures all parties are compensated and satisfied with the results provided.

It's important to remember there are specific guidelines for performing these tests. You are unable to count results that are along the edges of a pour (so address the edge finishing separately) and you are unable to count readings taken around stub ups for electrical or plumbing (preplaced conduit below or in the slab for electrical wiring or plumbing to be installed later, such as plumbing for a toilet). The testing equipment needs to be calibrated properly and operated by a professional.

Recently we had a customer's pour that was extremely well placed by the concrete contractor. A laser screed was used and the requirement for the floor was FF 50. The testing showed that the floor averaged out to an FF 37, which didn't meet specification requirements. During this project's investigation phase, we figured out the testing contractors had not properly calibrated their machine. When we retested the floor the average was in the 60s. I share this story to relay, "sometimes even testers make mistakes, so use your judgment."

If you are on a large remodel it may be worth the few hundred dollars it costs to have the floor tested for FF/FL prior to starting work. The FF/FL levels can severely affect your pricing. I see a lot of contractor paperwork where minimum tolerances are called out as part of the bid. For example, "This bid is based on a minimum FF average of 50. An average below 50 may increase the cost of polishing the floor." This inclusion protects the contractor and ensures the owner is aware of the issue.

*David Stephenson owns Polished Concrete Consultants, based in Dallas, Texas. As a consultant, he offers decorative concrete programs for retailers and troubleshooting for a wide range of clients. Contact him at david@polishedconsultants.com.*

# MARKETPLACE

# Lavacrete Table Flows and Glows

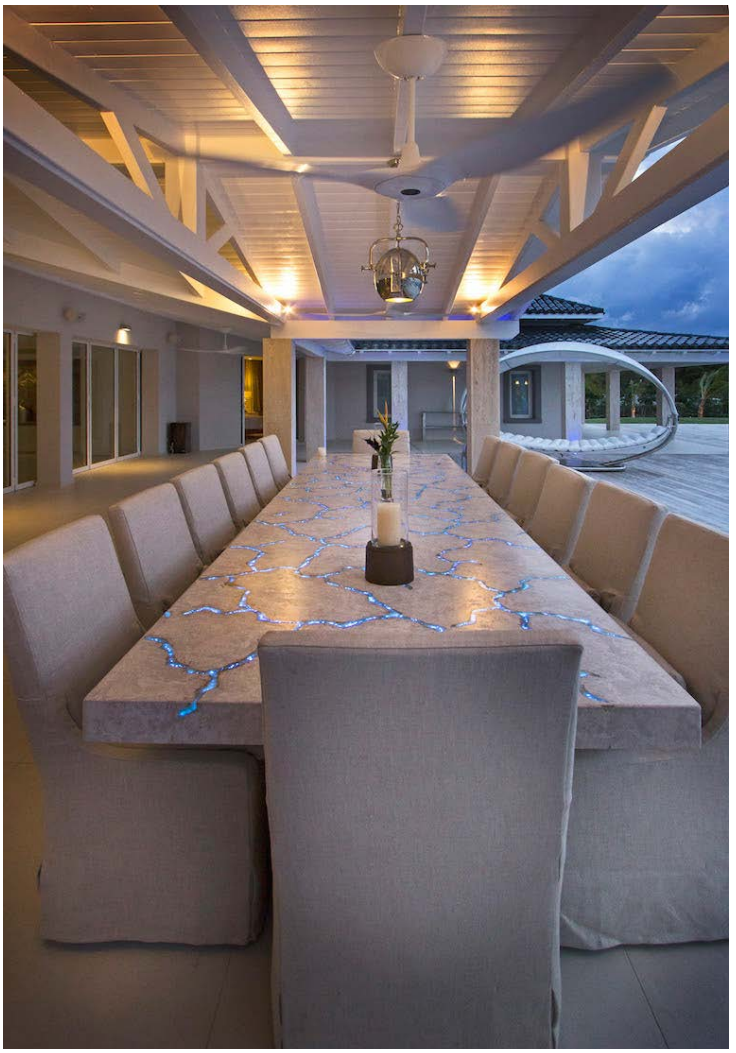
*by Vanessa Salvia*

An "outrageous" beach house on the French side of the Caribbean island St. Martin needed an anything-but-usual outdoor table. Jeff Kudrick of JM Lifestyles had previously worked on a large Lavacrete rock feature for the homeowner's Long Island, New York, home, and he liked it so much he wanted a Lavacrete table as well.

Lavacrete is the company's name for concrete with so many fiber-optic cables embedded in it that the light seems to flow. "It looks like lava flowing through the cracks in the top," explains Kudrick. "We create a void that we fill with a translucent material and individually place the fibers, then fill it."

Kudrick originally created a room filled with large fish tanks next to an indoor pool in the man's Long Island basement. A grotto from outside connected to the pool, and the food service area next to the grotto contained Lavacrete bar tops.

This 4-by-14-foot table utilizes the company's limestone texture with 15,000 pinpoints of light set in by hand. "The limestone texture is one of our products we call Coraline because it replicates the limestone you would see in Florida and the Caribbean," Kudrick says.



Photos courtesy of JM Lifestyles

The table's base is 3/16-inch stainless-steel panels on a stainless-steel frame. Because of the number of voids required to place so many fiber optics, the concrete mix requires reinforcement with basalt rebar acquired through Infinicrete. The table is sealed with SureCrete's XS-327 water-based sealer. The fiber-optic illuminators are DMX controlled, so whatever color is shining through the table matches the color of lighting emitted around the entire property.

"This was a crazy job," says Kudrick. "Everybody was speaking French when we were installing the table. It's delicate but it's also a giant table. No matter how light you make it, it's still heavy and it has all these fragile optics sticking out of it. We had to use forklifts and lifts when we were moving it because we didn't have enough guys and we were limited on equipment. It was so hectic trying to get that piece in without anything happening to it, but it turned out beautifully."

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