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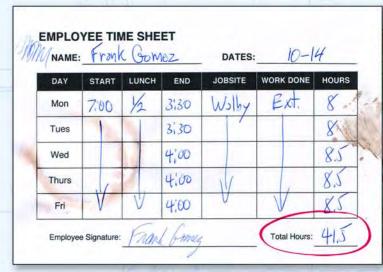






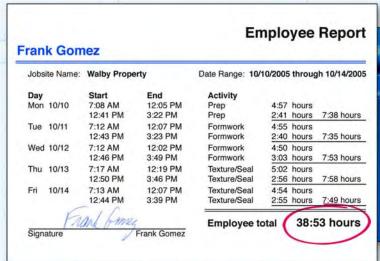
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#### Dear Readers,

ust a few weeks ago I took my nine-year-old son Matthew and his new bicycle to a BMX track here in Eugene. I had no intention of getting him involved in the sport, but after that first visit the rest is history. We're now regulars. And three times each week we drive across town so Matthew can try to earn another impressive "First Place" trophy to place on his bedroom dresser.

Well, today, I came home from work excited to grab a quick bite of dinner before heading off to the track. However, on my third attempt to call Matthew in for dinner and to prepare his things for another night at the



track, I got upset with his unwillingness to listen and to break away from his play time when asked repeatedly. Well, to make a long story short, the addition of a bad attitude got him into trouble and the result was two weeks of "restriction," including no BMX racing.

I've got to admit that his restriction hurts both of us. And at this time in my life I now know that grounding my son is like being grounded myself. Yeah, okay, you might say he's got a little bit of his dad in him!

Why do I bring this up, you might ask?

Years ago, when I was starting this magazine, I had to go through some very difficult times mentally, physically and emotionally. My struggles were both financial — never having enough money to do what needed to be done at the time — and relational, rarely sensing that anyone could understand my struggles and provide me a timely anecdote. Talk about feeling alone! Sometimes, it seems that the advertisers understood me best, but maybe they just had pity on me!

Yes, I'm pretty certain that everyone in business for themselves can share similar experiences. In fact, I'm even more certain that the people and things we really hold dearest to us have come with similar costs. If they didn't, I don't think we would hold on as tight, even when the seas are rough.

This is where I get back to the delicate and challenging task of raising children, and in particular, my oldest son. Having chosen an unfamiliar and rough road to follow in my life, I often find my resiliency to challenges much greater, raising my expectations of life and of others. I would imagine that this kind of attitude can make me the best and worst person to be around. Best because I have a tendency to challenge others, worst because I find it difficult to let up.

When I sat on the corner of Matthew's bed last night reaffirming my love for him and sharing that the biggest lessons in life are the toughest of times to endure, his tears reminded me of God's grace and how much He desires for all of us to live fulfilled lives. Life is full of struggles, no doubt, but having the strength to face them, I'm confident, will prove to be our biggest accomplishment. I think Matthew is now closer to understanding this important rule.

Sincerely,

Bent Mikkelsen, *Publisher* P. S. Enjoy this issue.

ONTHE COVER: This circular driveway, at a house in Highland Park, Texas, was stained with Kemiko's Cola Stain. For more on Kemiko Concrete Products, see our company profile on page 50.



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How to treat CONCRETE





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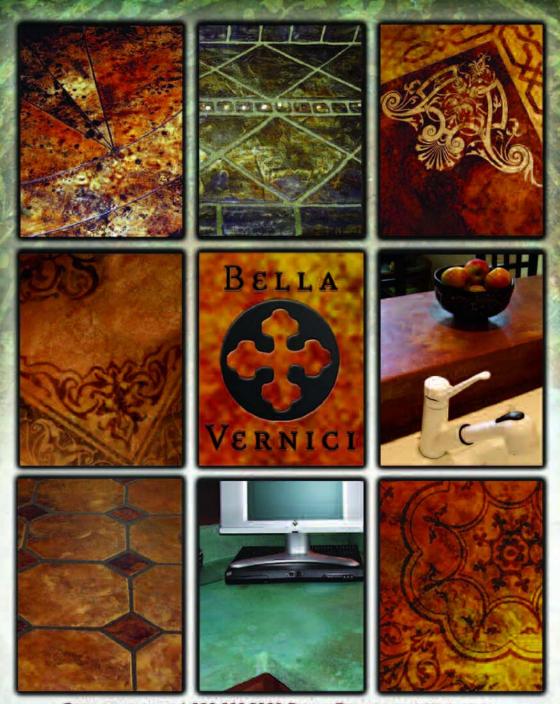
Although LEED credits aren't yet available for polished concrete, it's "green" as can be.

by Peter Wagner



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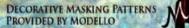
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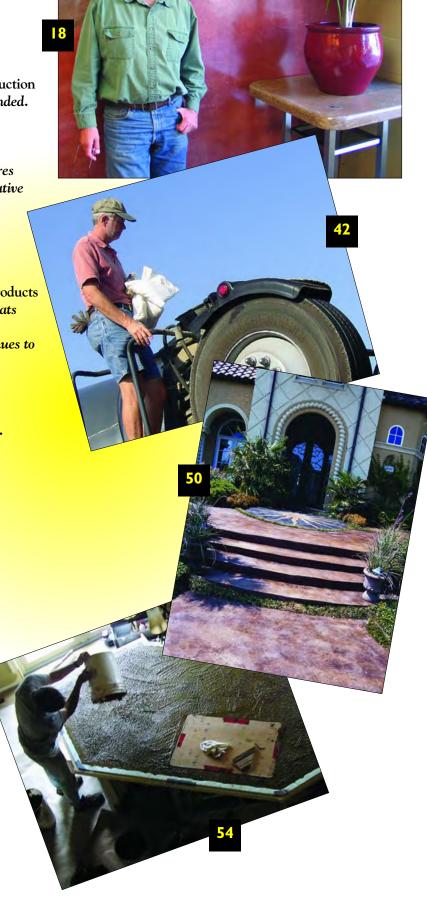
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#### **Consider This**

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— Barbara Sargent, president of Kemiko Concrete Products. See page 50 for more on Kemiko.





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Decorative Concrete Tips is a forum for readers to exchange information about methods, tools, and tricks they've devised.

Send details to CDTips,

Concrete Decor, P.O. Box 25210, Eugene, OR 97402.

We look forward to hearing from you!

#### A sound foundation for your countertops

hen blueprinting the process of forming cast-on-site counters, an important detail that's overlooked — or perhaps not thought through — is using the right material for the job.

When you're building a house, the most important part is the foundation, because without a good foundation you have nothing. Well, the most important part of cast-on-site counters is the sub-board.

We at Kipper Crete countertops strive for perfection, and when picking from the many materials that could be used for our sub-board we choose only the finest available. We choose a material that not only will last a lifetime but one that is water-resistant, won't warp, and is clean and easy to work with. What is it, you ask? There are a

few choices, and they are all good products that prevent water loss during the curing stage. These materials are Azek, Comma Board, or XO Board, which are all made by different manufacturers. (Some are only available regionally.) All of them are water-resistant and made of PVC. The Comma Board and XO Board are smooth on both sides. The Azek, which is great because it comes in 16-foot sheets, has small grooves but is still a boon for cast-on-site counters because the grooves allow the concrete to interlock itself with the board.

We at Kipper Crete countertops feel that saving steps (not cutting them) is saving money both now and later. To help preserve the future of the cast-on-site market, you have to be willing to go the extra mile, for you have to see the ending in every beginning.

— Thanks for this tip go to John Kipp of Kipper Crete.



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# What's new at ConcreteDecor.net

#### Information and Ideas

Once upon a time, word of an article that discussed coloring concrete with acid stains had everyone in the business clamoring for that tidbit of information. Today, Concrete Decor, the magazine that published those first articles, offers archives featuring five years worth of valuable information on the subject of decorative concrete. And yes, those first articles on concrete stains, stamping or overlays are online for your reading enjoyment.

You'll learn something new with every visit to the first and foremost magazine on decorative concrete. Simply go to www.concretedecor.net, log in by entering the current code word we've included below, and enjoy. While you're there, sign up for *Concrete Decor's* colorful new monthly newsletter that launches in January 2006.



#### Visit ConcreteDecor.net

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# Industry News

#### **Detroit truck city**

Lafarge North America has opened a state-of-theart cement distribution terminal in Detroit.

The facility is expected to reduce loading times for cement trucks and enhance the firm's ability to supply environmentally friendly blended cements to the region. It allows the company to create precisely proportioned and fully blended products on demand to meet virtually any specification, including high-performance ternary and quarternary blends. The new center features North America's largest cement silo, with fully automated blending and truck-loading operations. It also includes an automated truck delivery system, a high-speed vessel receiving system for faster unloading of barges and ships, and a 35,000-square-foot packaged-product warehouse, where a high-speed packaging and palletizing operation can produce up to 2,500 bags per hour.

For more about Lafarge North America, visit www.lafargenorthamerica.com.

#### New credit manager at Cemstone

Cemstone has promoted Mark James to the position of credit manager.

James will supervise the company's customer credit and collection operations for both readymixed concrete and contractor supply stores. He previously served as assistant credit manager at Cemstone.

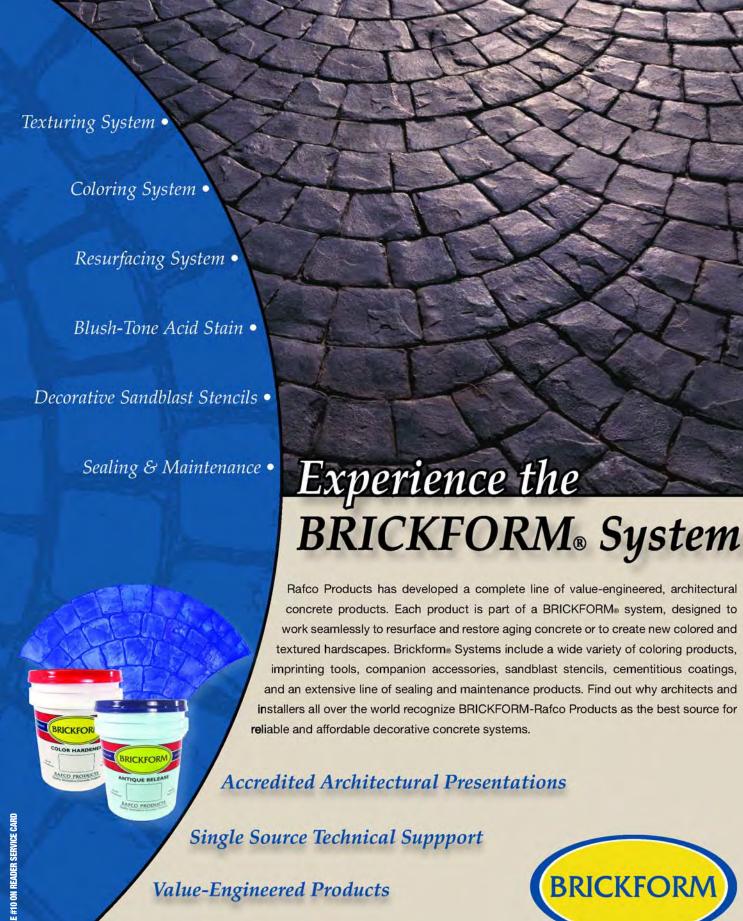
Based in Mendota Heights, Minn., Cemstone operates more than 40 ready-mix concrete plants, sells contractor supplies and materials through 16 stores, and is the nation's largest distributor of insulated concrete forms. For more, visit www.cemstone.com or call (800) 642-3887.

#### **Dumond beefs up sales**

Dumond Chemicals Inc. has added Frank Ritter and Hans Klinck to its sales management staff. The two new hires follow the appointment of John J. Petroci III as vice president, sales and business development.

Ritter was named director of sales for Northeast and target markets. He most recently served as director of commercial sales for Zinsser Co. Klinck was named regional sales manager, Western region. Prior to joining Dumond, he worked for Pratt & Lambert.

Dumond Chemicals Inc. manufactures paint and coating removal products. For more, visit www.peelaway.com or call (212) 869-6350.



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A new building for concrete coating manufacturer Super-Krete International Inc. is near completion.

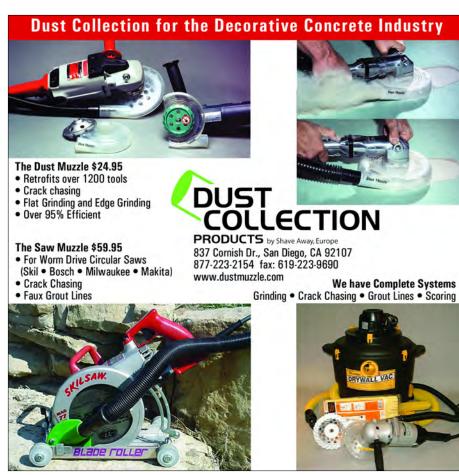
The structure, adjacent to Super-Krete's corporate headquarters in San Diego, will contain more than 7,000 square feet for inventory storage, plus a 3,000-square-foot indoor hands-on training classroom. The new training space will accommodate more than twice as many attendees as the company's older facilities. High demand for Super-Krete training seminars helped prompt the expansion.

For more details, visit www.super-krete.com or call (800) 995-1716.

## Multiquip expands worldwide reach

Multiquip Inc. has added dealers in Chile and South Africa to its international network.

AMECO Chile, a Santiago-based branch of South Carolina-based AMECO, is a full-service equipment,





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tool and supply dealership involved in capital construction projects and ongoing mining operations throughout Chile, Peru and Argentina. The dealership currently stocks Multiquip light towers and will start offering Multiquip rammers, plate compactors and welder/generators.

Rockcrete Equipment, in Alberton, South Africa, supplies wet and dry shotcrete pumps, concrete pumps and grout pumps.

Multiquip now supplies products to dealers on six continents and in more than 60 countries. Information about Multiquip can be found at www.multiquip.com or by calling (800) 421-1244. AMECO Chile can be found at www.ameco.cl and Rockcrete at www.rockcrete.co.za.

#### Distributing the dyes

Colormaker has opened a new distribution center in Cranbury, N.J., to better serve its customers in the Northeast.

The facility is stocked with the complete range of Colormaker products, including all 20 colors in the solvent-based Decographic Dye family.

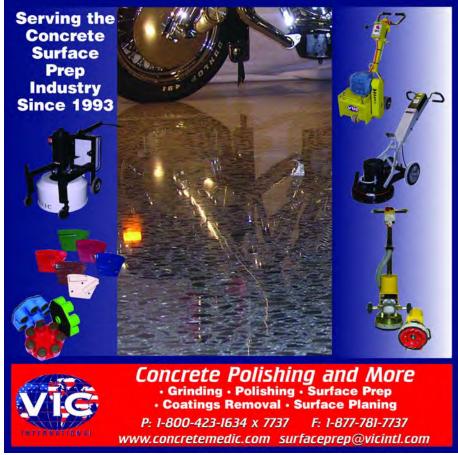
For more information, visit www.colormakerfloors.com or call (888) 875-9425.

## MAPEI president shares expertise

Nick Di Tempora, president of MAPEI Americas, has been named to the Dean's Executive Council at the Florida Atlantic University (FAU) School of Business.

In addition to sitting on the Council, Di Tempora will serve as a guest lecturer at the MBA Executive Forum this fall and address the Executive MBA class.

For more about MAPEI, visit www.mapei.com or call (800) 426-2734.





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CIRCLE #34 ON READER SERVICE CARD

# **Industry Spotlight**

#### **Association News**

# AMERICAN CONCRETE INSTITUTE Conventions moved to Kansas City

Because of the devastation in New Orleans, the American Concrete Institute has relocated its fall convention to the Kansas City Marriott and Convention Center in Kansas City, Mo. The dates of the convention remain unchanged: Nov. 6 through Nov. 10, 2005.

As a courtesy to those who have already registered, ACI has transferred all registrations from New Orleans to Kansas City. The preregistration cutoff date has been extended until Oct. 7, 2005. To register, visit ACI's website at www.concrete.org or call (248) 848-3800. For additional convention information, call (248) 848-3795.

The Strategic Development Council and American Shotcrete Association meetings will also be held in Kansas City, on Nov. 4 and Nov. 5. The International Concrete Repair Institute Convention will be held at the Kansas City Marriott, Nov. 2 through Nov. 5.

The American Concrete Institute extends its sympathies to those affected by Hurricane Katrina.

#### More pubs from ACI

The American Concrete Institute has released another batch of new publications.

"Symposium Publication 228: Seventh International Symposium on the Utilization of High-Strength/High-Performance Concrete" contains 96 papers presented at the 2005 Symposium. Topics include: research projects that investigate mechanical properties of high-performance lightweight concrete; properties of high-strength concrete using a high flyash content; research, development, and application of ultra-highperformance concrete; and nonconventional aggregates and mineral admixtures in high-performance concrete.

"301-05 — Specifications for Structural Concrete" is a reference that engineers or architects can cite in project specifications. It covers materials and proportioning of concrete; reinforcing and prestressing steels; production, placing, finishing, and curing of concrete; and formwork design and construction. Methods of treatment of joints and embedded items, repair of surface defects, and finishing of formed and unformed surfaces are also specified. Separate sections are devoted to architectural concrete, lightweight concrete, mass concrete, prestressed concrete, and shrinkage-compensating concrete.

"318-05 — Building Code Requirements for Structural Concrete and Commentary" is now available in metric and Spanish versions as well as English. It contains the latest code requirements for concrete building design and construction.

"332-04 — Requirements for Residential Concrete Construction and Commentary" offers a code portion that covers design and construction for castin-place concrete work for one- and two-family dwellings and townhouses.

"423.3R-05 — Recommendations for Concrete Members Prestressed with Unbonded Tendons" includes suggestions for revisions and additions to ACI 318. Consideration is given to determination of fire endurance, design for seismic forces, and design for catastrophic loadings, in addition to design for gravity and lateral loads.

"551.1R-05 — Tilt-Up Concrete Construction Guide" covers preconstruction planning, foundations, special considerations for slab-on-ground construction, wall panel forming and casting, panel erection, connections and repairing, and painting.

These publications can be ordered by visiting www.concrete.org or by calling (248) 848-3800.

### ACI photo book garners awards

The American Concrete Institute's coffee-table book, "Concrete: A Pictorial Celebration," has been awarded the Magnum Opus Grand and Gold Awards from Publications Management magazine. The Magnum Opus Awards are presented in conjunction with the Missouri School of Journalism to honor those who work to raise the bar in custom publishing.

The hardcover book has also won the APEX 2005 Award of Excellence from Communications Concepts Inc., in the "One-of-a-Kind Publication" category. APEX 2005 awards were given for excellence in graphic design, editorial content and the success of the entry in achieving overall communications effectiveness and excellence.

"Concrete: A Pictorial Celebration" was published to commemorate the American Concrete Institute's 100-year anniversary in 2004. It notes milestone achievements in the concrete industry and celebrates the utility and beauty of concrete for all applications.

For more, visit www.concrete.org.

# PORTLAND CEMENT ASSOCIATION Cement use still on the rise

Cement consumption this year is expected to increase 5 percent over 2004 levels, making 2005 the third straight year with record volume, according to the Portland Cement

The report is also predicting a 3.3 percent increase in 2006. Recent growth in nonresidential construction,

Association's Summer Forecast Report.

coupled with few signs of a slowdown in the residential sector, point to more demand next year. An increase in public works construction is also expected as state finances improve and the Transportation Equity Act program is initiated. Meanwhile, cement intensities continue to rise and are projected to do so through 2009.

For more about PCA reports, visit www.cement.org.

## Architects encouraged to think concrete

The Portland Cement Association launched Concrete Thinker.com, a Web site that enables architects interested in sustainable design to learn more about the environmental benefits of building with concrete.

Concrete Thinker.com provides access to valuable tools, case studies, profiles, up-to-date information on sustainable development, real-world examples and concrete solutions for environmentally responsible design.

The complete Concrete Thinker awareness program will include an upcoming architectural student competition, additional promotional initiatives for architects, and direct outreach to architecture firms nationwide.

For more about the PCA, visit www.cement.org.

#### NATIONAL READY MIXED CONCRETE ASSOCIATION Pervious placement certification on the way

The RMC Research Foundation has unveiled the Text Reference for Pervious Concrete Contractor Certification.

The text will serve as the basis of a certification for the placement of pervious concrete. Until now, no specific guidelines existed for the use of pervious concrete, which is rapidly growing in popularity across the country.

The Text Reference is available for purchase from the National Ready





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Mixed Concrete Association (NRMCA). Details on the certification exam may also be obtained from NRMCA, with the exam being administered through local sponsoring groups.

For more about the RMC Research Foundation, visit www.rmc-foundation.org.

# ASSOCIATED GENERAL CONTRACTORS OF AMERICA Cement shortage feared after Katrina

Ken Simonson, chief economist for AGC, has expressed concern about cement shortages in the coming year due to Hurricane Katrina. "The New Orleans customs district led the nation with 12 percent of total imports, which accounted for more than three percent of the nation's cement shipments during the first six months of 2005," Simonson noted. "Therefore, cement shortages are expected to worsen in some of the 32 states that were already experiencing shortages and spread to new states. Cement prices are likely to rise even more steeply than the 12.7 percent increase that occurred between August 2004 and August 2005."

AGC in mid-September sent a letter to the U.S. Department of Commerce urging that the Bush administration provide an immediate suspension of the anti-dumping duty on Mexican cement and allow imports of cement from all countries without duties or quotas in light of the emergency created by Hurricane Katrina.

"In light of the lost supply, it is imperative that other supply sources be made available as soon as possible," Simonson said. "Without it, construction projects and manufacture of concrete products in many states will have to halt, potentially laying off thousands of workers. Moreover, vital infrastructure repairs and reconstruction in the hurricane zone could be imperiled. One alternative is to import cement from Mexico by barge to all of the Gulf states and by rail into the Southwest. Such cement could arrive more promptly than cement from most of the current leading sources of imports, such as South Korea, China or Greece. But the current 55 percent anti-dumping duty makes Mexican cement prohibitively expensive."

# CONCRETE SAWING & DRILLING ASSOCIATION CSDA schedules convention

The Concrete Sawing & Drilling Association will hold its 34th annual convention in Charleston, S.C., between Jan. 28 and Feb. 1, 2006.

The event will include workshops on maintenance management and wage and hour compliance, presentations covering a range of topics from economics to safety, roundtable



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discussions, and the CSDA Tech Fair. Professional keynote speaker Chip Eichelberger will deliver the keynote address. For more information, visit www.csda.org or call (727) 577-5004.

#### More meat for members

The Concrete Sawing & Drilling Association has launched a new Web site at www.csda.org, the association's existing address.

The redesigned site includes several new features. In a Members Only area, CSDA members access valuable safety and training materials. The Specifier's Corner presents sawing and drilling specifications, standards and tolerances for all the major sawing and drilling applications, plus helpful articles and a contractor search function. The CSDA Store sells a wide range of industry resources, including CSDA safety manuals and handbooks, training videos and marketing materials.

All of the site's standard components remain, including a membership

directory, discussion board, calendar and magazine archive, advertising details, and information on becoming a member. To contact the CSDA by phone, call (727) 577-5004.

# Saw and drill directory features specs

The Concrete Sawing & Drilling Association has published the 2005-2006 Sawing & Drilling Resource Guide and Membership Directory.

This edition of the annual publication includes industry specifications for the first time, including specs for core drilling, flat sawing, wall sawing, wire sawing, hand sawing and chain sawing. Tolerances from the International Association of Concrete Drillers and Sawers are offered too. The directory portion lists sawing and drilling contractors worldwide, as well as industry manufacturers, distributors, affiliates and reciprocal associations. For more information, visit www.csda.org or call (727) 577-5004



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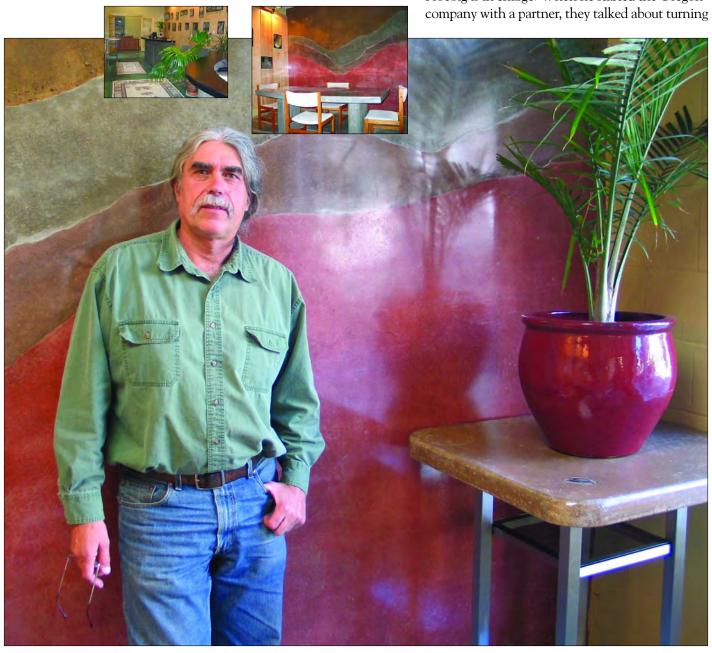
# Water Brothers Construction Inc.

Eugene, Oregon by John Strieder

hen newly minted college graduate Ken Froebig and a couple of his friends started their own construction company in the early 1970s, they took the name for their company from the thentrendy science fiction novel "Stranger In A Strange Land," in which "water brothers" share a deep communal bond.

Froebig moved to Oregon and founded a new company in 1996, but his new company, like the old one, was called Water Brothers Construction. "The word 'brothers' was important to me to represent camaraderie and team spirit," he says. "Water seemed appropriate to Oregon."

Today, a deep communal bond is still at the core of how Water Brothers does business. But Froebig is in charge. When he started the Oregon company with a partner, they talked about turning



it into a cooperative, he says, but that didn't happen. He and his wife are the active owners of the business today. "I recognized early on that you need to have a leader, and that was me," he says.

With Froebig's steady hand on the wheel, Water Brothers Construction never veers off course, even after its recent turn into the field of decorative concrete.

The company's signature decorative concrete project to date has been for itself. Earlier this year, it moved into an 800-square-foot office on the ground floor of a mixed-use development in downtown Eugene. Decorative concrete dominates the space, from a concrete chess table in a corner of the conference room to streams of color that stripe across the walls.



The conference table was poured in place, with gem fossils tapped into the surface. Grinding around the concrete edges of the gems to make the surface level exposed more aggregate than expected. But the visual impact looks literally explosive, with bits of stone fanning out around the gems on all sides. "Some of

decorative concrete is luck," notes Froebig. "I thought it came out pretty cool. I love this table."

The table's surface and the two desktop surfaces in the lobby are equipped with radiant heating. Froebig expects the heat from the three surfaces to keep the whole office warm in mild Oregon winters.

When the company was founded in Oregon, Water Brothers specialized in high wall foundations and hillside foundations, using an aluminum form system that Froebig says was unique to the area. Gradually, the company began taking on more specialized structural concrete jobs such as radius walls and caissons. It also constructed a concrete bunker for a 911 call-switch center.

The company first dabbled in decorative concrete three years ago, working with exposed aggregate, finishing walls and stamping patios. This year, the company has delved into decorative concrete much more extensively. The crew wanted the challenge, Froebig says. "As we



evolved, the level of competency among our crew increased. The brothers were looking for something a little more creative."

The crown jewel of one current project, at a home in the hills on the south side of Eugene, is a concrete garden shed with a waterfall cascading off the back part of its roof. A pipe pumps water to the top. "A lot of people want water features," he says. "People like the sound of running water."







But even now, decorative concrete and hardscaping make up only about 20 percent of the company's business. "Our bread and butter is still hillside foundations," Froebig says.

The company also maintains a small excavation business and does flatwork. Diversity is essential to the health of Water Brothers, Froebig says. "We're not just a decorative concrete company. We still pride ourselves on being multifaceted. We do all phases of concrete. I don't believe in putting all my eggs in one basket."

Indeed, at the home with the water-accented garden shed, Water Brothers crews are also pouring the initial foundation, installing sand-finished walkways and doing prep work and flats. At a second current project, another Eugene hills home, the company is doing excavation, drainage, caps and detail work, building walls and stamping patios. "It's a project perfectly suited for this company," Froebig says.

His commitment to some parts of the business stems partly from pride. Foundation repair and replacement is not easy, he says, and Oregon's historic bungalows can be saved with his expertise. "There are very few people who want to do that work," he says.

In the Eugene market, decorative concrete projects have not generated enough revenue to sustain the company, he adds. People love his concrete countertops, but once they find out how much he charges, they walk away. "I find it really difficult to make money on those projects," he says. "I'm not sure this market is ready."

The new office, anchored by its immobile poured-in-place table, is a public relations coup for the company. "We've got substance," Froebig says. "We're not going to disappear."

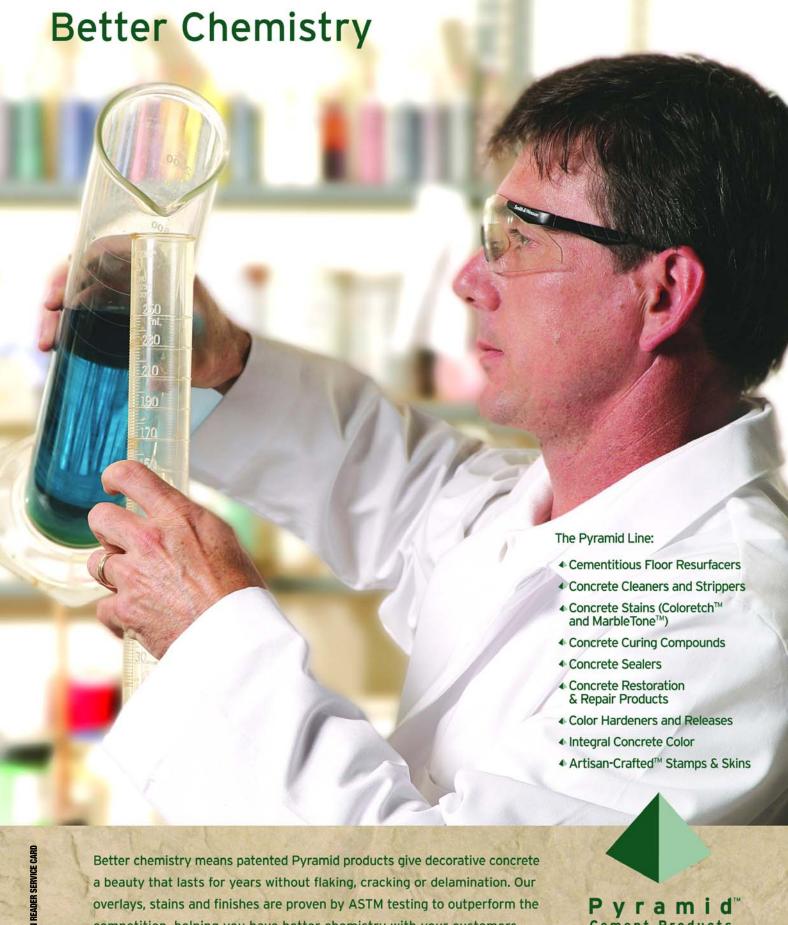
The downtown location offers visibility as well as proximity to downtown shops and eateries. "It's important to come to work in an environment where you feel that you want to go to work," he says.

Employee morale is important to Froebig. He says the key to keeping his business healthy is making everybody comfortable, both clients and employees. He hosts company parties and hands out colorful T-shirts emblazoned with slogans such as "Zen and the Art of Rebar" and "Foundations Keep You Grounded." "Guys love this stuff," Froebig says. "They just eat it up."

Half of Water Brothers' employees have been with the company for more than five years. When turnover does occur, Froebig doesn't have to worry much about finding quality replacements. "They find us, usually through another crew member."

At the same time, Froebig keeps a tight lid on the head count. Water Brothers once had 28 employees, and he says he wasn't able to effectively manage employee attitudes and other intangibles. "Once it gets too big, you lose that brotherhood."

Now, the company has 20 employees, including its president, and that's the way he wants it to stay. "Right now, I want to be in five years exactly where I am now, but refined. I want the machine to work better."

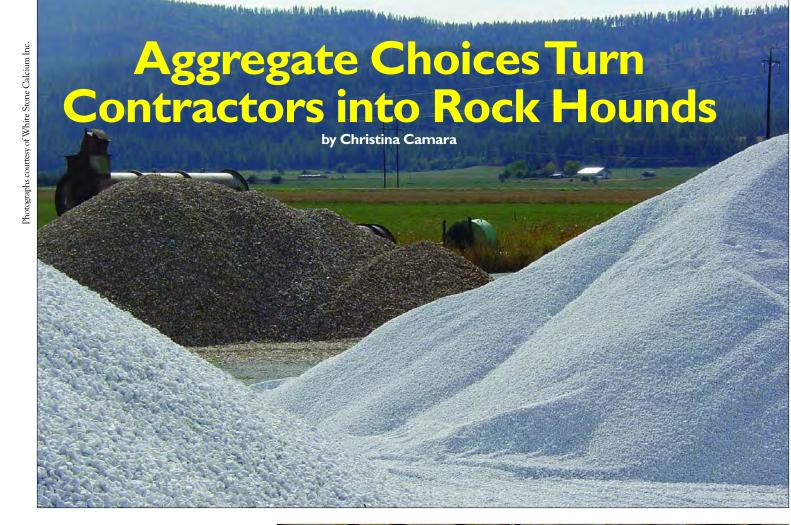


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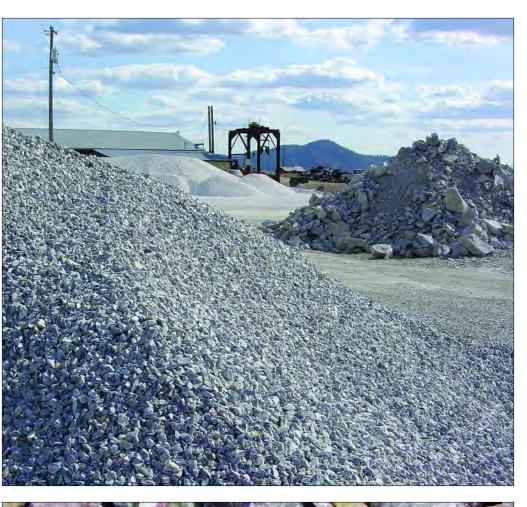


ull, gray, utilitarian.
Decorative concrete
contractors discarded those
descriptions of concrete a long time
ago, producing a dizzying number of
colors and designs.

What some contractors may not have considered is producing unusual colors using colored aggregate — either as part of the concrete mix or through various exposed-aggregate techniques. A soft champagne pink? Glittery blue? Bright white? All these colors, and more, are possible by taking advantage of the various shapes, colors and characteristics of aggregate unique to different parts of the country.

When working with exposed aggregate, contractors can use a standard concrete mix or find special aggregate with unusual colors or shapes. It can be broadcast on the surface of the concrete, but the trick is to make sure it's installed to the right depth and that it's scattered evenly. If it's not deep enough, the aggregate can break loose







from the slab; too deep, and too little is exposed.

Colorful aggregate can make the difference between boring and brilliant. Bart Sacco's Concrete Texturing Tool & Supply, located inside a newly built, gated castle in Throop, Penn., near Scranton, shows the range of possibilities available with aggregate. On one floor, Sacco used a concrete mix from Masters Ready Mix Concrete that contained a local blue aggregate, cured it for 28 days under burlap, and a few days later, ground and polished it. "When I poured the floor, I also put glass in it to bring another dimension to it," Sacco says. White and black pigments and chopped mirror were also used. "It looks dynamite," he says. On another floor in his training center, he used white glass, black smelter glass, and green and black pigments and created a deep emerald green underfoot.

#### The look of terrazzo

Terr-Con, manufactured by LPL Enterprises of Rochester, N.Y., is a specialty flooring system that combines two age-old products, concrete and terrazzo, incorporating colorful aggregate, glass chips, metal pieces, mother of pearl and more into a six-inch structural slab. Jason Bye of Rochester-based Floored LLC, a national distributor for Terr-Con, says the system was created by partners with extensive background in terrazzo, flatwork and concrete mix design, but it still took more than three years of practice on garage floors to perfect their product. One of the real challenges was to ensure a consistent placement of the aggregate to avoid the "spotty" look that inexperienced contractors can get. Getting the aggregate into the concrete at the appropriate time is another trick.

"We like to get close to a terrazzo look, but it's more durable than terrazzo due to the RetroPlate finish, and the big advantage is we're about half the cost of terrazzo," Bye says. RetroPlate, a diamond grinding and polishing system developed by Advanced Floor Products of Provo, Utah, eliminates the need for any sealers, lowering maintenance costs tremendously.



Terr-Con, which is not a topping but an integral part of the slab, is popular in high-traffic areas such as hospital lobbies and school hallways and cafeterias, Bye says. The company has covered more than half a million square feet for just one grocery store client.

#### Aggregate so bright you gotta wear shades

Aggregates offered by White Stone Calcium Inc., based in Chewelah, Wash., have also been used with great success for flooring in retail environments. In particular, one white rock is so bright that it actually lowered

lighting costs for three grocery stores in Washington, says General Manager Russ Wilcox. He says piles of the white rock at the quarry are so bright, you need to wear sunglasses "or else you'll get a blinding headache. You wouldn't want to go in there with a hangover."

White Stone Calcium produces 12 colors of marble, granite and quartzite, with jet black, valley rose, salt and pepper, buckskin and china white among their offerings.

Nature has produced a range of colors in Wilcox's backyard. A large deposit of dolomite with few impurities formed the bright white rock. A vein of iron impurities in another area created a rose-colored aggregate, both of which feature large crystals that reflect light.

White Stone Calcium's specialty aggregates are also used for terrazzo flooring and in exposed aggregate precast buildings. Nike sought out the clean, white look for an office building in Oregon. The Beaverton City Library, also in Oregon, uses the buckskin-





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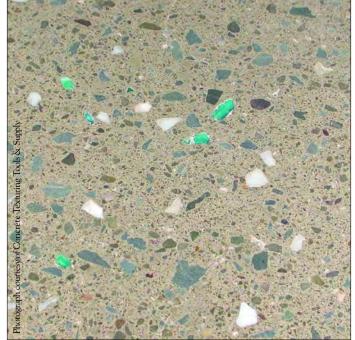
colored aggregate, which is very hard and resists scratches.

Because there is no reactivity in the aggregate, acid etching does not change the colors, Wilcox says, and sandblasting or admixtures enhance them.

#### **East Coast colors**

On the other side of the country in northeastern Pennsylvania, a blue-gray sandstone is a popular aggregate. Robert Housel, of Masters Ready Mix Concrete, says the blue stone is softer

than some, but it's being shipped all over. One contractor in Chicago ordered two dump trucks hauled out there. "He liked the color so much, he had to have it." In northern New York, a sparkly black and white granite is available. A hard stone, it works well for concrete. "Hardness and durability



of the particles are the key things we look for," Housel says.

Aggregate color and quality can vary dramatically in a small area. Bart Sacco says that a gray stone can be found on the east side of the Poconos Mountains, where he lives; on the other side, there are tans, pinks and some browns. From the base of the mountains comes a soft yellow aggregate used for fireplaces and storefronts. The glittery blue stone he used on his business floor is found about 20 miles north.

Contractors are also seeding recycled glass and even seashells into their decorative concrete projects. Some are using colored aggregates to inlay graphic designs into driveways, pool decks and more.

Aggregate suppliers can tell you about stone that is unique to their part of the country.

The color of natural aggregates varies widely depending on the geologic features of the area. Try a dark granite from Minnesota, a pink quartzite from South Dakota or a golden-colored aggregate from Virginia. Everything from a delicate rose quartz to a rich black basalt is available. The possibilities are limitless.



**CIRCLE #62 ON READER SERVICE CARD** 





nterior decorative concrete is all the rage for countertops, floors and bathtubs, but nowhere does it pack more design punch than in fireplace surrounds and hearths. Fireplaces are inherently the "heart of the home," and a striking concrete surround takes that role to a higher level. "You can make concrete forms look more three-dimensional and massive than wood," says Buddy Rhodes of Buddy Rhodes Studio in San Francisco. "The fireplace has a presence in the room — it becomes the dominant force."

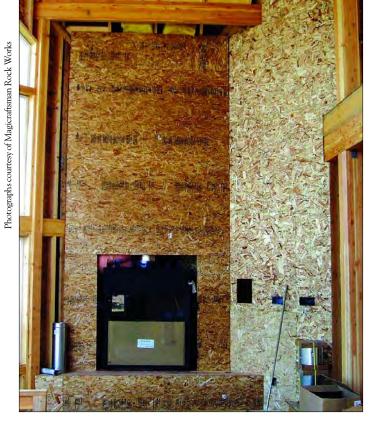
Blayde Penza, president of Advanced Concrete Enhancement Inc. (ACE), in Sun Valley, Calif., feels the same way. "People love concrete for the look you can achieve," he says. "The first impression is not, 'Oh, that's concrete,' it's 'Wow, that's stunning — what is it?" A concrete hearth becomes a conversation."













Mark Lesnick of Mark Concrete, in Moss Landing, Calif., likes the natural look of a concrete fireplace.

"Traditionally, fireplaces were masonry or stone for fire resistance. Concrete is made of similar natural materials and has that same feeling. It makes more sense than wood or marble."

#### **Concrete properties**

Concrete has unique properties that set it apart from wood or stone hearth materials. "The primary advantage of concrete is unlimited design options," Penza says. "There is so much we can do with concrete to make it suitable for any type of décor."

Dana Hochberg of Get Real Surfaces Inc., Poughkeepsie, N.Y., says, "Because concrete is cast rather than carved, you can get more complicated shapes — any shape you want." Dave Pettigrew, of Diamond D Co. in Capitola, Calif., likes the fact that he can color the concrete to match any décor or designer's color scheme. "They have a hard time doing that with other materials." While there are some contractors who create molds

and reuse them for certain details or standard openings, the consensus is that the biggest advantage of concrete is the ability to create one-of-a-kind architectural elements that complement the design of the whole house or structure.

This versatility also makes concrete cost-effective for elaborate designs. "With marble or granite, you have to tool the shapes in stone," says Fu-Tung Cheng, principal at Cheng Concrete Exchange, a division of Cheng Design in Berkeley, Calif. "We tool the mold material



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(polyurethane or casting plaster) instead and that is less expensive than carving and polishing stone." Hochberg points out that it is difficult to compare material costs directly because there are so many other variables. "Comparing the cost of a concrete fireplace to stone or brick depends on the design. A flat rectangle is comparable to natural stone. When you're dealing with a shape, concrete is

#### This stunning fireplace was created using products from Rock & Water Creations.

more economical because it takes less time to achieve the shape."

Pettigrew also likes concrete because it is warm and inviting. "Concrete hearths radiate heat and they are comfortable to sit on."

#### The mix

Fireplace surrounds can be made from the same mix used for countertops and other interior applications. Cheng recommends a high-quality countertop mix — a 6.5 sack mix that he says "is a little creamier than the usual 5.5 sack mix. That gives more definition to details."

Some artisans develop unique mixes for the look and performance they want. "Most people who do this well have developed their own mixes," Penza says. "We developed a mix design with eight different components. It is

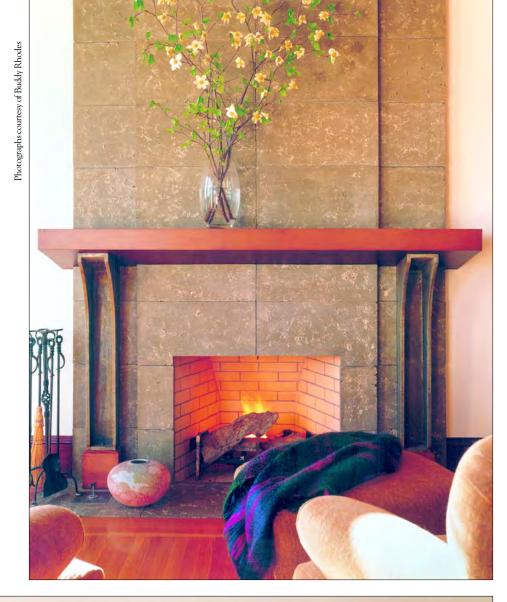
very stable — it won't warp or curl. We guarantee it won't crack. There are many ways to make concrete stronger — water reduction is one of them."

Rhodes also keeps water in his mix to a minimum. "I've developed a mix to make massive hollow forms," he says. "The concrete is just an inch-and-aquarter thick. The mix is like dry pastry dough and I use an additive to make it plastic. I pour it into a negative mold and butter it up the sides. I pack it into the mold and make hollow forms. Then I trowel the surface the next day."

Pettigrew likes concrete with a "real low slump," so he uses a water-reducing additive. He says, "Don't use a lot of water — water is the enemy. Too much water will make concrete crack or shrink or curl." He also adds fiber of manmade material similar to that used to construct Stealth aircraft. "It makes a web in the concrete to help prevent cracking," he says.

For aggregate, Rhodes likes to use marble chips, dolomite and silica sand. He says these make the concrete buttery







to trowel — and the exposed marble creates a nice look for polished surfaces. He uses a finer aggregate than a normal bag mix and also uses white cement.

Keeping weight down is a factor when creating massive forms such as fireplace hearths and surrounds, and that sometimes dictates the aggregates that are chosen. "We're not looking for a heavy structure," Cheng says. He hollows out forms with foam to cut down on weight and then uses pea gravel for better detail. Further, he says, "If necessary, we'll go to lightweight expanded shale as well, to achieve a 20 percent reduction in weight per volume."

Mark Lesnick uses a similar technique. "We use expanded shale aggregate so the weight of our units is about two-thirds the weight of typical concrete," he says. "This makes them easier to install."

There is a difference of opinion about aggregate shape. Some prefer angular aggregates, believing they interlock better and result in stronger concrete. Others prefer non-angular aggregates, saying they flow and fill in voids better.

#### Precast or cast-in-place?

Whether an artisan creates fireplace hearths and surrounds by casting them on-site or precasting in the shop seems to be a matter of personal preference and experience. Cheng's fireplaces are usually an element of a larger overall design. He builds forms or uses molds on-site, using plastic to create a barrier between the wall and the pour.

A large proportion of Pettigrew's business at Diamond D Co. is remodeling. He builds forms or Styrofoam molds over existing fireplaces and casts in place. He also uses microtoppings in certain remodels. Microtoppings easily cover brick or masonry and can be finished like concrete or troweled to resemble stucco.

On the other side, Penza says that his company precasts in a controlled environment. "This allows us to control curing and the overall process," he says. "It is also more convenient for the customer and for the other trades working on a project."

In either case, it is critical that the structure of the house be adequate to support a concrete hearth and surround. "Make sure the foundation can handle the load," Cheng says, "and don't cantilever the hearth too far over the floor joists." He casts around bolts tied in with wire and rebar that are then lagged to the framing. In a similar technique, Rhodes casts in a brick tie or metal tab that can screw into the stud. In addition he uses mastic or construction adhesive. a "belt and suspenders" approach also favored by Hochberg, who recommends installing a plywood frame around the fireplace and using masonry fasteners and thin-set adhesive to fasten the surround.

#### **Finishing**

It seems there are as many color and finish options for concrete fireplaces as there are artists to dream them up. One school of thought tends toward an understated, natural look. "We use integral pigments to achieve fairly muted art tones for fireplaces — earth tones, browns and grays," Hochberg

says. "Brighter colors become dated. Generally all our work is finished by sanding to a low sheen." Rhodes uses mostly gray, with some tan, black and smoky colors. His finishes range from hard-troweled to ground and polished. He also specializes in a pressed surface where he backfills voids with colored concrete paste and polishes the surface.

Cheng also belongs to the "natural look" school. "Colors that evoke the bottom of a riverbed or leaves in a stream tend to be timeless. We don't use white cement and we don't have a big color range, based on my feeling that if you offer too many bright colors it's all very trendy and it becomes difficult for the client to settle in on a color."

At the other extreme, Pettigrew uses every technique known for coloring concrete and says, "I've never had a color I couldn't match," an ability that plays well to the remodel market. He adds Davis Color's integral color to the ready-mix if he is pouring more than a yard of concrete. Otherwise he mixes integral color on-site. He also uses

chemical stains to create unique surfaces in blue, brown, black gold and green. He favors penetrating pigments to match Pantone colors. "The pigments are not opaque, so the concrete looks like a natural piece of stone," he says. "You can look through the color and see the nature of the concrete."

Lesnick likes to use iron oxide pigments. With a palette of about 150 colors and five or six different finishing techniques, he offers customers a lot of variety. He uses a light diamond polish to make concrete shine, and more aggressive grinding to expose aggregate. He offers a natural finish with air holes, the way the concrete comes out of the mold, for an industrial feel. He says acid-etched surfaces look like sandstone and sandblasting looks rustic and aged. His company also offers a unique crackle surface, which he achieves by manipulating the mix to force surface microcracks and then using stains to create an antique look. He first developed the technique to match a customer's crackled-glazed tile.



CIRCLE #66 ON READER SERVICE CARD









Advanced Concrete Enhancement also offers a large color palette. Penza recommends always showing customers samples. Further, he says, "You have to be able to control and reproduce colors. Documenting is very important. We once poured five different pieces for the same project — it was Murphy's Law at its best! One piece was broken, one was measured wrong, one was recast because the customer wanted to add something. In the end, five different pieces were poured at five different times and every one matched. That's when we said, "Wow, we've got the colors figured out."

The final finishing touch for most concrete fireplaces is a sealer. Many

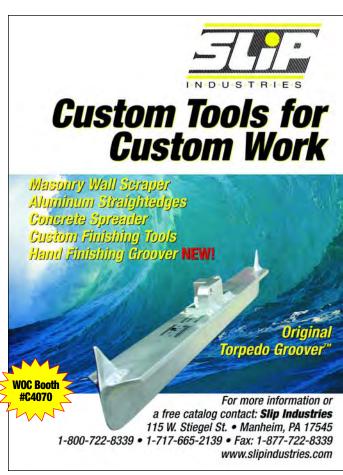
fireplaces today are gas, but in the case of a wood-burning fireplace, there is a chance for a log or ember to fall onto the hearth and char the concrete. A sealer offers a sacrificial surface: If it chars it can be sanded off and new sealer applied with no damage to the concrete. Any sealer suitable for interior concrete may be used.

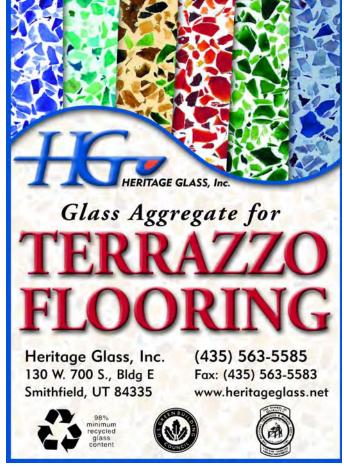
#### Every job is unique

Surrounds and hearths offer more opportunities for expression than almost any other interior concrete project. Pettigrew tells a story that perfectly illustrates the agony and the ecstasy of creating fireplaces from concrete: "I had

one lady who wanted her hearth 'smooth, but rough.' Now how was I going to do that? I woke up one morning and I remembered one time I rolled up excess concrete in plastic to dispose of it. It had rough grooves, but was shiny-smooth on the face. So I put plastic on the forms and made some creases and wrinkles. I rolled concrete over the top, weighted it with cardboard. When I pulled the plastic off after cure, I had rough depressions and cavities and a smooth surface. When she saw it she said it was exactly what she had in mind."









# Polyurea Coatings: Quick, Tough, and Beautiful

With their quick setup time, low solvent content and amazing durability, what's not to like about this new type of coating?

by Loretta Hall





s polymer floor systems go, polyurea is the new kid on the block. But during the past decade, the technology has evolved significantly and the coatings have become increasingly popular. "Our studies showed that you can increase the service life of the facility two to three times what the current technology was able to provide," says Rob Loomis, a chemist with polyurea manufacturer Willamette Valley Co. "That's in terms of chemical resistance and abrasion resistance."

One of polyurea's most unusual properties is its short cure time. Pure polyurea can set up in 15 seconds or less. In fact, the traditional application method is spraying with a plural-component impingement gun with mechanical purging. Newer formulations, however, have somewhat longer cure times and can be applied using a squeegee followed by backrolling. Those products have pot lives of 15 to 60 minutes, are dry to the touch after about four hours, and can accept regular foot traffic after about 24 hours.

Project completion time is minimized in another way, too. The coating can be applied to the full desired thickness in one layer. Typical applications are 60 mils to120 mils thick, but layers outside that range are also possible. Eliminating the need to apply multiple coats to achieve full thickness reduces the true cost of the system. The direct cost of labor is less, as is down time for the facility.

Polyurea formulations are either 100 percent solids or very close to it. With little or no solvent content, the products are nonflammable and emit little or no odors or VOCs during application. "Being 100 percent solids, it's a closed-molecule system," says Jose Ibarra, owner of Crown West Inc., the West Coast distributor for Crown Polymers. "It doesn't bleed, it doesn't open up, it doesn't allow for growth of algae and bacteria." This makes polyurea a good candidate for coating floors in places like hospitals and food-

Photographs courtesy of Versatile Building Products

processing plants. It can even be applied overnight or while the facility remains in operation.

There's another advantage to having little or no solvent content. "Coatings that are very high in solvents have to be applied in such a way that the dry-film thickness meets the specification required for the job," explains Mark Glendrange, technical director for Versatile Building Products. "The film thickness wet is equal to the film thickness dry with the polyurea."

Polyurea coatings can be applied successfully at any reasonable temperature, from near freezing to more than 100 degrees Fahrenheit. They are also much more tolerant of humidity than other coatings. "When you spray urethanes or nonpolyurea type technologies [in humid air], the density of the coating will change. You can have a less dense, or more permeable, product, whereas the pure polyurea systems cure and have the same density under the wide range of humidity conditions," Loomis says.

#### Keys to good results

Basically, polyurea is the result of a chemical reaction between two liquids — an isocyanate and a resin. The isocyanate can be either an aromatic or an aliphatic compound. More detailed descriptions of polyurea begin to sound like the final exam of a second-semester chemistry class. The bottom line, though, is that the choice of isocyanate type, inclusion of various additives, and variations in the component proportions can produce an assortment of polyurea products with different physical properties.

For example, aliphatic polyureas are UV stable. Sunlight will cause aromatic-based products to yellow, although this effect can be slowed by incorporating UV absorbers as additives or in a topcoat. On the other hand, aromatic polyureas may be slightly more resistant to solvents. Nevertheless, all polyureas provide a clear, hard, durable coat that will typically outlast comparable alternatives.

Proper mixing of polyurea's two components is essential for a successful application. When the material is to be applied by pouring and spreading, the manufacturer's directions must be followed carefully. Generally, the two components are measured according to the specified ratio and poured into a container, where they are stirred with a mixing blade at 350 to 400 rpm for 2 to 3 minutes. Then, to make sure the material near the sides of the container is fully incorporated, the mixture is transferred to another container and mixed for an additional 30 to 60 seconds.

Adequate surface preparation is also a key to success. Concrete floors should be cured for at least 28 days, and the surface should be clean and dry. A thin primer coat is usually recommended. "If you're going over raw concrete and it's a high wearability area, we recommend a thin layer of an epoxy — maybe 2 mils — to get a good bonding that works with the polyurea and not risk any delamination," Ibarra says. He adds that acid-etched or stained concrete is considered a sealed-coat system that the polyurea can bond directly to.

The best finish is achieved by backrolling with a short-nap mohair roller. Virtually all polyurea products



ave Pettigrew gets a kick out of doing innovative things with decorative concrete. On his current project, he's using a double dose of creativity.

West End Commons is a new 91-unit loft development in Oakland, Calif. The two- and three-story townhouses have office space on the ground floor, with living space in the upper levels. Pettigrew's company, Diamond D Concrete, won the subcontract to clean and clear-coat 40,000 square feet of concrete slab floors.

When he got to the site, Pettigrew found the concrete was noticeably stained from rain and construction activity. Unable to remove all the stains, and unhappy with the dirty-brown color of the concrete, he came up with a better idea. He convinced the contractor to use a polyurea floor system that would be more attractive as well as more durable. With the help of Jose Ibarra of Crown West Inc., he found a way to

disguise the stains and improve the floor's color by adding pigment to the polyurea coating. "This polyurea with the charcoal tint in it took away 90 percent of that stuff," he says. "You can look down in there and see the characteristics of the concrete, but it doesn't pop out at you so vividly."

Pettigrew and Ibarra used trial and error on a series of samples to arrive at the best pigment concentration. The tint is added to the polyurea's Part A component before it is

mixed with the Part B component. After thorough blending, the material is broadcast over the floor, squeegeed, and backrolled.

The other innovation on this project had to do with the surface finish. "I made the contractor a mock-up of the polyurea finish, and it was too shiny," Pettigrew says. "So then I went back and sanded the top of the polyurea and put a satin epoxy coating on top. It turned out just beautiful."

In all, Pettigrew is using a three-coat flooring system on the project. After mechanically cleaning the bare concrete, he applies an epoxy clear coat as a bonding layer and covers it with the tinted polyurea.

Then, he sands and vacuums the surface before applying the

satin epoxy topcoat. "You can use a light satin wax on it, and it's good to go for years to come," he says.

You can hear the pride in his voice as he describes the results. "This floor system is 16 mils to 20 mils thick, so it's good for ten years with minimal upkeep and maintenance." Then he says excitedly, "The floors are gorgeous. They look like you can reach down in them, but they don't have that real high sheen like the polyurea does." Finally he adds, "The cost is barely more than just putting the sealer down."









have a high-gloss finish. The gloss can be reduced if desired. For example, Ibarra suggests applying a topcoat using a clear, water-based polyester polyurethane, or applying a satin or matte-finish wax.

The durable polyurea surface is easy to maintain. Regular cleaning can be done with a nonabrasive cleaning agent such as a mild soap solution or a gentle solvent. "Most facilities have their own cleaning agents that they use," Loomis says. "Those cleaning agents need to be disclosed, and compatibility with the polyurea coating needs to be tested. I've heard of cases where there have been problems with discoloration."

#### **Dollars and sense**

"Usually the polyureas will be more expensive," Glendrange says. A true cost comparison, though, involves more than simply the purchase price of the product. Labor costs for installing polyurea are generally lower because of the ability to apply the full thickness in one layer. Reduced downtime for the facility can also add to costeffectiveness. Longer service life compared to other coatings must be factored in, too. Ultimately, the overall cost of a polyurea system is quite competitive with its alternatives. And, Glendrange adds, "The film properties as far as the gloss and the physical property of toughness are superior to most other coatings."

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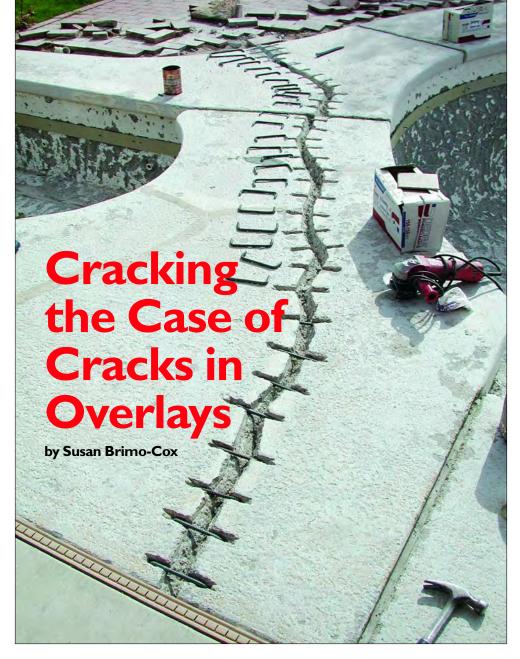
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**CIRCLE #114 ON READER SERVICE CARD** 





any decorative concrete artists favor overlays as their canvas of choice. And the artwork that can be produced with these products is often breathtaking. So, it is especially unfortunate when cracks appear in an overlay.

What causes cracks in overlays? A number of things.

Most overlay experts agree that the most common crack-inducing culprit is the substrate, and there can be multiple factors involved. Expansion joints in the underlying slab that are not honored will telegraph through an overlay. But, more often than not, it's movement in the substrate that will produce cracks in the overlay.

"No overlays are structural," says Seth Pevarnik, manager of technical service at Ardex Engineered Cements. "If the concrete [below] wants to move, it can result in a crack in the overlay."

The simplest solution is to prevent cracks before they happen — before you apply the overlay. Brian Vicari, owner of The Concrete Colorist Inc., says you should always examine the substrate slab and look specifically for areas that may cause issues in the future, such as cracks that are raised on one side (signaling up and down movement), wide cracks, expansion joints, utility trenches and prior patches. "Identifying these trouble spots will allow you to correctly address these areas prior to installing an overlay, hence preventing cracks."

Another substrate problem that can come to haunt you is moisture vapor emissions. Dave Pettigrew, owner and president of Diamond D Co., says he can't stress enough how important it is to control moisture. "You'll open an ugly can of worms if you don't. Vapor emission through a slab below a nonbreathable overlay can and will lift the overlay." Again, prevention is paramount.

But even if you do everything right in preparing the slab before you apply the overlay, you may still get cracks. You may experience shrinkage cracks, often the result of applying the overlay

#### **Contractor's troubleshooting tip:**

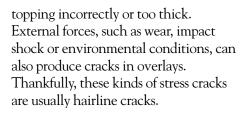
Repair cracks in the substrate first to avoid cracks in your overlay.

#### Brian Vicari, CEO/owner of Concrete Colorist

Most cracks in a substrate will telegraph through overlays if not prepared properly, so spend the extra time and dollars to prep the area correctly. If you repair problem areas prior to installing an overlay you will minimize the chances of cracks in your overlay.

One method of repairing cracks in the substrate that has worked for me is to clean out the cracks with an angle grinder with either a crack-chasing blade or a typical 4½-inch diamond blade. Vacuum the joint and prime with the priming agent used for your patch product. Once it is dry, patch with a high-early-strength concrete patch material. Make sure that you fill the crack to the top — do not fill it like grout so there is a depression, and do not overfill so that patch material is on either side of the crack. Once the patch is dry, take a razor-blade scraper (wallpaper scraper) and clean any excess material off. Next roll on an elastomeric polymer, such as "Mulasticoat," over the crack and, while still wet, place a fibermesh tape over the crack and apply another coat of elastomeric polymer over the tape. (I like to use a thick nap roller, not the little foam rollers, because it holds more material.) Allow this to dry for a minimum of 8 hours. Now that the cracks have been patched and covered with elastomeric polymer and fiber-mesh tape, we have minimized the chances of that crack coming back. The theory behind this is

similar to the taping of drywall joints except that you are using a flexible material to span the crack. This method should move with the slab if it decides to move in the future.



#### Assess the problem first

It is important to assess the situation before you commence making any repairs to a cracked overlay.

Removal of the overlay and reapplication after the underlying problem is corrected is the most expensive and most labor-intensive solution, and usually, reports Pevarnik, not the chosen method. That leaves repairing the cracks or doing nothing, both options that certainly have their place, he adds.

Ron Borum, executive vice president of Crossfield Products Corp.'s Miracote Division, cautions that before you make a repair you should determine the reason for the crack or cracks in the overlay, and you should have some knowledge of the overlay material installed. Knowing the root cause of the cracking will help direct you as to what kind of repair technique to use, he says. Monolithic, self-leveling products are considered the most difficult to repair, primarily because it is more difficult to camouflage a repair on these surfaces. Stampable and stencil-grade overlays, as well as microtoppings and splatter/knockdown overlays, are considered more easy to repair because you can work back to a joint or use the textured finish to help hide crack repairs.

#### Repairing large cracks

If your crack is wider than a hairline, you will have some prep work to do before you fill it. You will first need to decide whether you are going to repair the crack and try to hide it or whether you will repair the crack but let it become part of the overall design.

If the crack you are repairing is from an existing joint in the substrate below that wasn't honored when the overlay was applied — say an expansion joint — it might be easier to work the crack into the design.

As Borum observes, when you decide to work the crack into the design you will be leaving it exposed, but it can work for you as a relief joint that helps maintain the function of the overlay. In fact, aesthetically, if you choose this option you may want to induce additional cracks. When doing this, he

says, you want the additional cracks to be random, so as to hide the naturally occurring crack.

Chasing a large crack is important in preparing the crack to be filled. Some contractors use a router, others saw-cut through the overlay. What you fill the crack with depends on the overlay used and your desired outcome. Some overlay manufacturers offer repair kits;

most do not. But, as Borum explains, the kit is not the most important factor: using similar or like materials is.

If the crack is going to remain a functioning joint, you might want to fill it with a semirigid epoxy or elastomeric joint material — something that is flexible. You may want to use a colored product that blends in somewhat, or use a contrasting color for graphic line effect.

#### Repairing hairline cracks

Fortunately, most cracks you'll encounter in overlays are likely to be hairline cracks. As Mark Donaldson, owner of Skookum Floors USA Ltd., points out, chasing hairline cracks is too aggressive and would only make them more noticeable. So the job of repair is a little less intensive, but it is that much more important to use the proper material to fill hairline cracks.

"Usually a very fine, nonsanded grout or concrete patch can be used. It can be feathered into the crack similar to grouting a tile joint," Donaldson explains. Once the grout has set up, you would use a sponge and clean rag to wipe away any residue.

Another technique is to just apply another coat of sealer over the whole floor. If the crack is tight, this can often do the trick.

If the hairline cracks are still apparent, you can use a pigmented sealer and fog it on around the hairline crack. This does two things: It helps seal up the crack, preventing water from getting in the crack and darkening it. It also helps to blend the finish into the rest of the floor. (This technique does take a little practice.) Finish up by applying a clear topcoat.

Pevarnik says an option chosen frequently with regard to hairline cracks is to do nothing. The hairline cracks can add an antique look to the floor that some people find desirable. Filling and patching cracks, on the other hand, is still a patch and can make the floor look worse. "Sometimes it's better to leave it alone," he says.

One way to help a customer decide the best course of action when it comes



CIRCLE #54 ON READER SERVICE CARD





to hairline cracks is to make up a sample board to illustrate how a repair might look.

#### Hiding crack repairs

Camouflaging crack repairs requires skills in faux finishing. "The outstanding artists out there can make these repairs virtually unseen," Pevarnik explains.

Donaldson recommends using a variety of artist's materials, such as acrylic paints, markers, water-based paints and an array of paintbrushes. "A color match takes an experienced eye,

but usually it is handy to have an artist's kit with a variety of colors. Usually, by adding water and using different layering techniques and faux finishing as necessary, you can blend in a crack with its surroundings."

After the repair is made and blended in, it is recommended that the whole floor be resealed. A consistent sheen across the whole surface will also help to hide any repairs made.

No matter what technique you use to repair a crack in an overlay, remember that a crack can be repaired and masked, but never really completely hidden. As Ira Goldberg, president of Beyond Concrete, points out, "There is no 100-percent-perfect solution. Some of the successful methods I have developed have taken many years of trial and error."

And, I suppose, that really is the crux of the matter. Contractors have developed a variety of techniques to repair cracks in overlays — different methods for different situations. What appears to be consistent across the board, however, is the need for an artistic eye, finesse and practice.





**CIRCLE #88 ON READER SERVICE CARD** 

# Speed Up Your

by John Strieder



o kick the set time of a batch of concrete into high gear, hit the accelerator.

Like water reducers, retarders and plasticizers, accelerators are one of the most popular kinds of chemical admixtures, added to a concrete batch either immediately before or during mixing. Accelerators make concrete set faster, also known as increasing the rate of hydration. At the same time, they

promote strength development so it happens earlier in the set time of a slab.

If a contractor is using an accelerator, the odds are good that the weather is wintry. Accelerators counteract the influence of cold weather, which slows down the curing and setting process.

But accelerators aren't just for cold weather. A contractor can use one anytime a curing process needs a kick. The admixture may allow a concrete worker to remove forms earlier, get onto a concrete surface earlier for finishing, and sometimes even put loads on it earlier, such as when diverting foot traffic to do patching.

"Decorative guys will use accelerators in summer. It helps control the process when stamping," says Terry Collins, concrete construction engineer with the Portland Cement Association.

# Set Time

If an accelerator is added to concrete on one half of a pour, a contractor can start stamping on that side, work his way to the other side, and enjoy a relatively consistent level of workability throughout. Decorative contractors have been using retarding admixtures for several years to achieve this effect, says Gabriel Ojeda, president of concrete admixture manufacturer Fritz-Pak Corp., and accelerators can pull off more or less the same trick.

Because accelerators cut set time, they can reduce labor costs, Ojeda says. They can also hasten the time an indoor remodel job, such as a cast-in-place countertop, takes to set, Ojeda says. "You don't want people to have to wait seven, 10, 15 days without being able to use their kitchen," he says.

And while they do cost a little extra, accelerators may still be a better bargain than, say, natural gas. "If you don't accelerate, and you have a short set time, the other option is heat," Ojeda says. "Heat is now more expensive because of energy consumption. It may be cheaper to use accelerators than to heat a building."

#### Calcium chloride pros and cons

A number of chemicals qualify as accelerators, but the most common is calcium chloride. It's cheap, plentiful, and readily available from huge chemical companies.

However, while calcium chloride may be the cheap favorite for concrete in general, it is not necessarily the best option for decorative concrete.

Calcium chloride slightly increases workability and reduces the water

required to achieve a given slump in a mix, according to a report from the Federal Highway Administration. It reduces initial and final setting times, and it improves compressive and flexural strengths of concrete at early ages.

Guidelines published by the Portland Cement Association list colored concrete among the jobs in which calcium chloride "should be used with caution." The guidelines also state that slabs intended to receive dryshake metallic finishes should not take calcium chloride or admixtures that contain soluble chlorides, and neither should most slabs poured in hot weather.

Decorative concrete contractors are going to be discouraged from using calcium chloride, says Collins of the PCA. It can inhibit the ability of acid stain to react with cement in the concrete. And it increases the potential for efflorescence. These aren't significant problems on generic concrete slabs, but on decorative jobs, they can be distressing. "Most people see a little bit of white powder on the sidewalk, they sweep it off and forget about it," Collins says. "But they see a little bit of white powder on decorative concrete and they tend to believe the world is ending, there's something wrong with it."

Excessive amounts of calcium chloride may cause rapid stiffening and shrinkage while drying, creating cracks in the cured surface. Calcium chloride may promote corrosion in steel reinforcements and increase the potential for scaling.

Perhaps most troubling for decorative contractors, calcium

chloride may darken their slab. The chemical is hydroscopic. Just as table salt gets hard absorbing water from the air, calcium chloride literally liquefies. "If you put a pile of it on a table and come back in the morning, it will be all water," Ojeda says.

That's essentially how calcium chloride can make concrete darker, Ojeda says. Say a colored slab with calcium chloride is half in the shade, half in the sun. Rain or moisture will linger longer on the shady portion, get sucked into the slab by the calcium chloride, and make that part darker. The change won't be significant, he acknowledges, but "it's still enough to make a difference in color between the shaded area and sunny area."

Calcium chloride's potential to oxidize might also change the tint of colors and pigments that are based on iron oxide, he says.

Contractors can take steps to minimize cracking caused by calcium chloride's shrinkage, says Tim Reason, president of Chargar Corp., a manufacturer of concrete and masonry products. "You may try to keep the surface wet and damp during the curing process. That might help a little bit."

Reason also downplays the concern that calcium chloride may promote corrosion of reinforcing steel, noting that, even if it occurred, the corrosion would take a long time to become a real problem. "The corrosion issue is something they've been saying for a hundred years, but I don't know if they've definitely proved it," he says. "It may. But how long is it going to take? It's not like it's going to deteriorate in a year or so."

#### **Alternatives**

In any case, contractors who want to accelerate their concrete aren't forced to use calcium chloride. There are alternatives.

"Although calcium chloride is an effective and economical accelerator, its corrosion-related problem limited its use and forced engineers to look for other options, mainly nonchloride accelerating admixtures," states the FHA report.

Sodium thiocyanate, triethanolamine, and calcium formate, nitrate and nitrite are among the "nonchlorides" that have been successfully used to accelerate concrete set times.

There are four of the most common:

 Calcium formate: Mostly used in powder form for materials such as dry bricking and stuccos. It may require slightly more material per pound than calcium chloride to achieve the

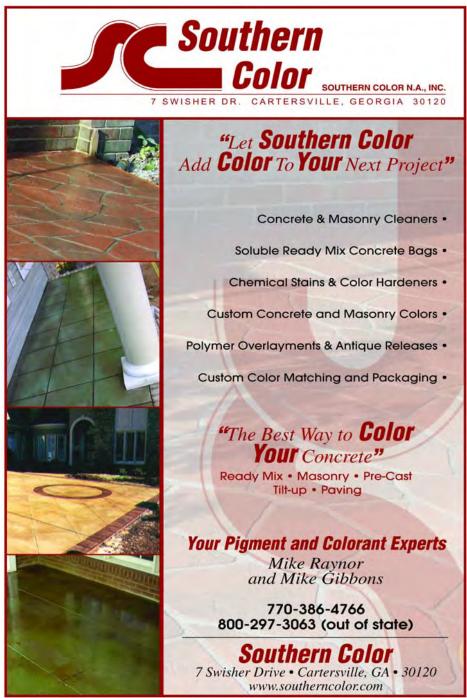
- same effect, and it can react with certain cement compositions to alter compressive strength development. It cannot be used in a highly concentrated solution.
- Triethanolamine: Described in the FHA report as an "oily, water-soluble liquid with a fishy odor." It's very dose sensitive, and if too much is used, it acts as a retardant. It's also very toxic.
- Calcium nitrite: More toxic than calcium nitrates (although toxicity isn't much of an issue once something is embedded in a concrete mix). It prevents corrosion.
- Calcium nitrate: More water-soluble than calcium formate. Nitrates and nitrites both fall under the environmental category of "fertilizers" and are monitored under the Toxics Release Inventory of the Environmental Protection Agency.

Accelerators are typically added at the manufacturer level, and with many manufacturers, the exact chemical makeup will be closely held, Ojeda notes. "We use calcium formate as a base, but we add other materials to boost performance of the formulation. That's proprietary."

Again, none of these alternative admixtures costs as little as calcium chloride does. "Calcium chloride is the least expensive of all the materials," Ojeda says. "That's the main reason people would not use a nonchloride accelerator."

Of course, decorative concrete contractors also have other techniques for accelerating concrete besides adding an accelerator. Using cement that promotes high early strength will work. So will adding a water reducer, curing at higher temperatures, and lowering the water-cement ratio by putting more cement into the concrete.

"It's very common for decorative concrete guys to just increase the cement content by 100 pounds and just call it a day," Collins says. "That will have the same effect."





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## ASCC Workshop and Demos Emphasize Preventing, Correcting Problems

he annual meeting of the American Society of
Concrete Contractors, held in Denver in September,
was a showplace of what can go wrong — by design.
A popular workshop on decorative concrete, "What to Do
When Things Go Wrong," was followed in the afternoon
with demonstrations of common problems and the products
and techniques to correct them.

Presenters Bob Harris of the Decorative Concrete Institute and Clark Branum of Brickform Products reviewed several common problems — and solutions — with stamping, staining, overlays, integral color and concrete countertops. Some of their suggestions are reported here.

#### **Stamping**

Harris and Branum emphasized that the most effective way to deliver a stamped project that lives up to what the customer expects (and thus will pay for) is to make sure the customer knows what to expect. Harris said that in thousands of stamp jobs, he has only completed one that was "perfect," and that was only three yards. Samples and mock-ups created with the exact mix, materials and sealers you plan to use will give customers the best idea of what their project will look like. Your mock-ups should use not only the same materials you plan to use on the job, but also the same techniques. A 2' x 2' sample that takes hours of painstaking work to prepare is not likely to convey an accurate idea of a finished project.

Once reasonable expectations are in place, an ounce of

prevention is worth a pound of cure. One common problem with stamping is the concrete setting too fast, which results in poor imprints as well as cracks. Partnering with the ready-mix supplier and getting the mix just right are critical because the substitution of fly ash for cement (currently in short supply) or the addition of water reducers can ruin a stamping project. The speakers recommended identifying one's own design mix with a code for the ready-mix supplier so it will be delivered exactly the same every time.

Plastic shrinkage and stress cracks are caused by moisture evaporating rapidly — faster than the bleed rate — from the surface. It's best to solve this problem by applying an evaporation retarder over a dry shake color hardener, not by adding "water of convenience" to the surface.

#### **Staining**

Common causes of concrete failing to take a chemical stain as expected include incorrect slab preparation, contaminants on the slab, the use of certain finishing techniques and mix design. Contaminants like old sealers, oils and food residue must be cleaned from the slab before stain is applied. If one part doesn't take a stain, a matching water-based stain can be applied to that area and the edges feathered with an airbrush or stipple brush to blend in.

Timing is everything in a staining project. The fresher the slab, the more intense the color will be. Blue or green stains should be applied as late as possible to prevent them turning black.

Even if the stain is applied perfectly to a well-prepared slab, the project is still vulnerable. Make sure the trades that follow understand that the floor will be exposed and that driving a forklift over it, leaving a toolbox on it or writing out a quick calculation with a pencil will leave permanent marks. While Harris and Branum strongly recommend an exclusion in the contract making the general contractor responsible for this type of damage, some simple repair techniques can also help. Imperfections and light damage can be sanded away and a matching water-based stain applied to repair small areas.

Clark Branum of Brickform Products removes blemishes, including pencil marks, from a stained slab during demonstrations at the ASCC annual meeting. The color was later restored by applying a matched water-based acrylic stain with an airless sprayer.



#### **Overlays**

Poor bonding is the cause of most overlay failures, and failure to bond is usually caused by poor surface preparation. Old sealers must be removed and the surface neutralized.

Cracks and shrinkage occur when an overlay sets too fast. This happens when the substrate is too dry or when high temperatures, wind or sun accelerate the set. If possible, apply overlays during the cool part of the day when the surface is shaded. Also, priming the clean surface before applying the overlay prevents moisture loss into the substrate. The overlay needs to be applied in the correct thickness, and maintaining a heavy, "fat" wet edge prevents moisture loss and unsightly transitions.

Blistering is caused by improper priming, substrate conditions, air entrapment and overworking the overlay. This problem can be prevented by allowing the primer to tack up, keeping the substrate moist, avoiding overmixing, and using a resin float. Blisters can be reduced by running a spiked roller over the surface or by sanding them off.

#### Integral color

Compared with labor-intensive techniques like stamping and staining, integral color would seem pretty straightforward, but colored concrete can look blotchy and uneven when it suffers what Branum and Harris called "differential curing." They made a plea to "stop mix abuse" — in other words, a consistent mix from batch to batch is critical. Some curing methods adversely affect integral color, so it's essential to check recommendations from the color supplier. Problems will also occur if you have an uneven subgrade, which will cause variations in slab thickness. An uneven slab won't cure uniformly, and the color may end up dappled.

#### Tips from the pros

The following is a small sampling of helpful hints shared at demonstrations sponsored by the Decorative Concrete Council during the recent annual meeting of the American Society of Concrete Contractors.

- Small cracks may be visible in stamped concrete after the release agent is rinsed. Apply water to the crack with a wet finger and lightly ping the crack closed with a flat-faced hammer.
- To avoid concrete setting too fast to be stamped, pour one-third of the batch and then add a step retarder to the remaining mix. Pour one-third more and add another step retarder before pouring the final third.
- Shut down HVAC, particularly underfloor heating systems, until stained concrete is completely cured. (This lesson was learned the hard way.)
- Before staining an existing slab, run a damp mop over it to show the customer imperfections such as footprints and birdbaths. These flaws will be greatly exaggerated by staining.
- Apply stains by spraying rather than brooming to avoid brush marks and puddles that will cause "burned" spots.
- Keep doors closed to prevent a draft from curing one section of a fresh interior overlay more quickly than the rest.
- Put reinforcement for countertops near the bottom of the slab, not the middle, to prevent ghosting of the reinforcement outline on the surface.
- Don't set a countertop slab on a table to cure the solid surface will prevent
  moisture from escaping evenly and the slab will curl.

Integrally colored concrete will also cure at different rates if objects are set on it. Avoid tossing used forms, setting toolboxes or storing construction materials on colored concrete before it is completely cured.

Sometimes these color differences will disappear with additional cure time. Other means of color correction include dissipating cures, color cures, color waxes, pigmented sealers, and water-based stains applied to the discolored area.

An integrally colored slab discolored by differential cure (left) was restored by brooming on two coats of a matching water-based polymer. The polymer starts out lighter, but gradually darkens. When the color stops changing, no more brooming is required. The original texture of the concrete is preserved.



#### We saw it at ASCC

Demonstrations at the 2005 Annual Meeting of the American Society of Concrete Contractors included some new products. Here are a couple of note.



Artist Shay Davis, www.shayvision.com, uses watercolor pencil to touch up drawings made on concrete. The vivid concrete color effects are created by brushing on a new microtopping product from Miracote that contains colored epoxy micropowders. The 100 percent solids material is troweled or brushed on. Night clubs and game halls are early adopters of the technique.



Retarders with different levels of etching capability were applied over a stencil to a single slab to expose aggregate at different rates. The retarder also makes the stencil easier to remove without damaging the edges of the design, even when it is left on for days.

Poor finishing also impacts integral color. Bleed water on the surface, finishing too soon and overworking or burnishing the surface will all make the color uneven.

#### **Countertops**

Countertops create many of the same issues as other concrete projects, but on a smaller scale and often under closer scrutiny. When adding coloring agents or other ingredients to the mix it is important to remember one is working with relatively tiny amounts, so precise measurement is required to maintain consistency.



Jeff Girard of the Concrete Countertop Institute places welded wire steel reinforcement into a precast concrete bathroom vanity. Girard says the welded wire makes it simple to put the right amount of reinforcement in the right location.

Countertop slabs are at risk for cracking and curling. Again, proper mix design and consistency help prevent such problems. Proper reinforcement also prevents problems. Flexural strength is more important than compressive strength for countertop mixes to prevent cracking, and structural steel reinforcement is one way to provide the strength a countertop requires without stressing and cracking the concrete.

As interest in decorative concrete grows, the risk of poorly installed projects — installed by inexperienced, untrained contractors — multiplies. The American Society of Concrete Contractors and the Decorative Concrete Council are working hard to promote quality and protect this booming industry.

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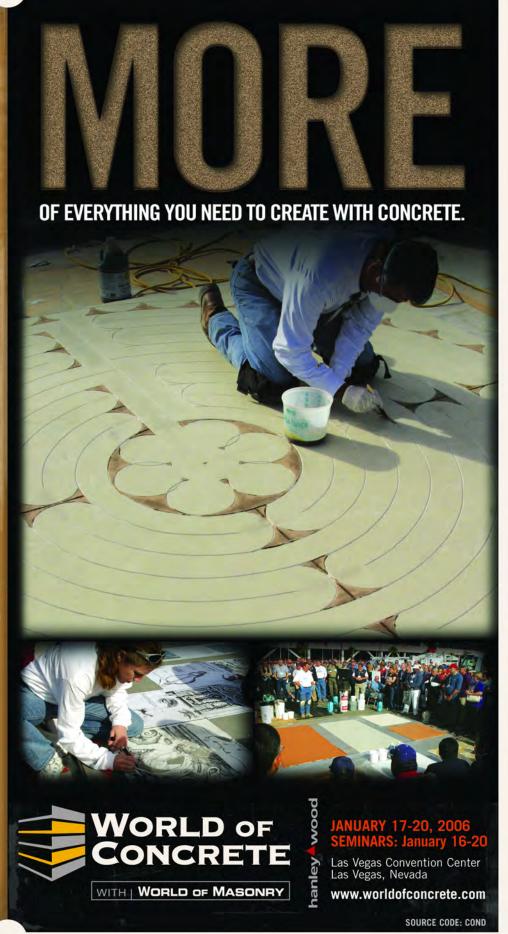
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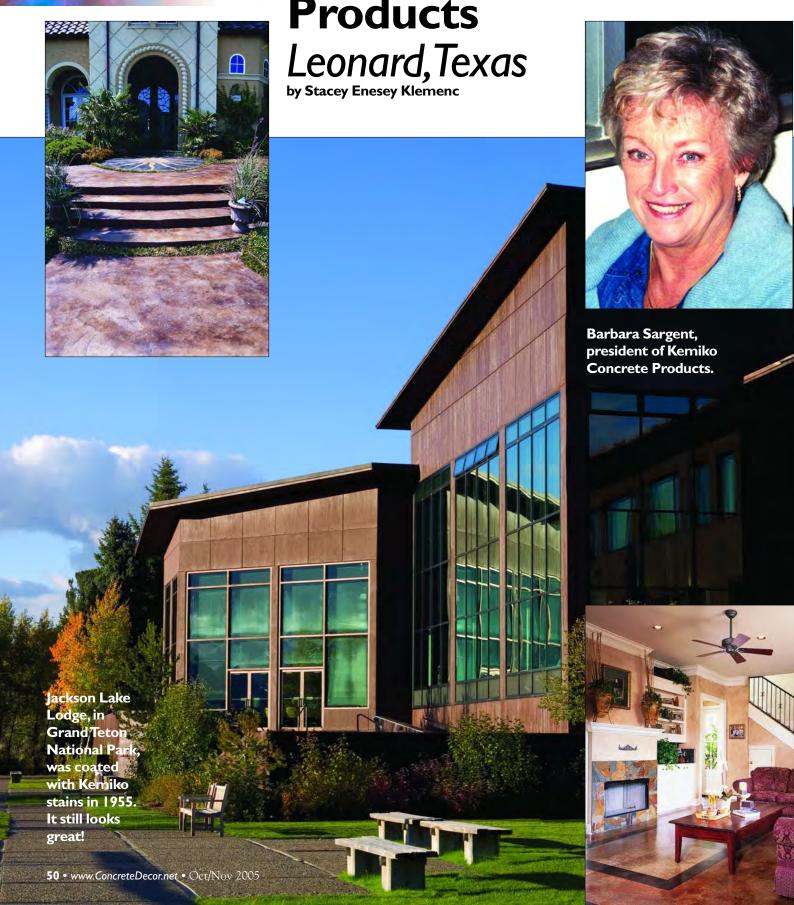
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# Manufacturer Profile: Kemiko Concrete Products Leonard Texas



arbara Sargent, president of Kemiko Concrete Products in Leonard, Texas, says she first became smitten with Kemiko products when she worked for Lambert Landscape Co., a high-end architectural landscaping firm based in Dallas. "For 21 years, I had the experience of selling Kemiko and incorporating it into gardens," says Sargent, who now heads up the company that distributes the products nationally. "Anything pertaining to concrete, we 'Kemikoed."

While at Lambert, she explains, she worked hand-in-hand with a dozen architects "who were all crazy about this product." So she accepted their philosophy and took it home — literally.

She used the acid stains all around her house — around the pool deck, in the walkway through her perennial garden, on the patios. "They're as pretty today as when I first did them, maybe even prettier. The stains are permanent; they're there to stay." And the best part, she adds, "The concrete just goes away."

#### Now you see it, now you don't

Lambert's landscape architects detested drab gray concrete because it didn't go well with their elaborate garden designs. They insisted that a little bit of black Kemiko stain — which consistently produces a mottled tortoise-shell black — went a long way in remedying the problem.







"If you water down our black Kemiko stain and apply it to a garden patio, the concrete will take on a compost hue that resembles the bark of trees," Sargent explains. "These earth tones produce a softer garden feel that makes the concrete more harmonious with nature."

In addition to black, Kemiko Stone Tone Stains are available in seven other colors from about 100 regional distributors throughout the country. The stains can be used inside or outside. "The most popular is Cola, which resembles old distressed leather," Sargent says. Next in line is Malay Tan, whose subtle tones are a big hit with interior designers. "It complements any jewel tone," she says, "and it almost looks like suede." Nationwide, she adds, she sells a lot of blue and green in desert states, as well as areas along the water.

#### For a touch of Disney

For those jobs where people want a rainbow of colors, the Kemiko line offers its Rembrandt Polymer Stains. Made with a water-extended acrylic urethane formula, "They're a complement to our acid stains," Sargent says. The ultra-low-VOC product is extremely user-friendly and practically void of any odor.

From soft pastels to vibrant purples, they're available in a wide spectrum of color. "They're an excellent choice when trying to obtain colors that acid stain won't provide," Sargent says. "They're what we call our 'Disney World' colors, as they produce true reds, true yellows. They're very appealing for such facilities as day spas, children's care centers and retail outlets."

In addition to Kemiko's product lines of acid and polymer stains, the company offers sealants and waxes to help protect decorative concrete surfaces. "Our sales nationwide [of protective products] consist of 90 percent concrete wax and 10 percent sealer," Sargent says, adding she recommends wax for the ultimate finishing touch.

"The wax, which is easy to apply and easy to maintain, is driven down into the concrete," she explains. "It's formulated to produce a low-satin sheen, and if it's applied properly, the surface only needs to be waxed every couple of years and dampmopped as needed. Once you try it, you'll love it."

#### **Excellent training tops the list**

For training, Sargent has hooked up with Bob Harris, president of the Decorative Concrete Institute. She says she met him at a recent World of Concrete and the two just clicked. "We share the same business philosophy in that we both very strongly feel that a contractor's success in the decorative concrete industry depends on training. Not just good training, but excellent training, by an instructor with real-world experience who understands concrete and what can be accomplished with it."

Harris, who not only founded DCI but is also the author of two best-selling books, easily fits that bill. "Bob, having

personally placed or supervised more than 3 million square feet of decorative concrete, is in an elite league that sets his training workshops apart from so many others out there," Sargent says. "Knowing your

trade is one thing, but you've also got to be committed to improving your skills and knowledge for the betterment of the industry as a whole."

Couple this ongoing training with a good product, she says, and you come up with a winning combination.

#### Decorative concrete: It's here to stay

"I'm frequently asked if the decorative concrete stain trend might be a fad or a temporary explosion," Sargent says. "And I've put a lot of thought into my answer."

For starters, such architectural greats as Frank Lloyd Wright believed in decorative concrete. "He used Kemiko concrete stain throughout his career," she says with obvious pride. And back in 1955, the Jackson Lake Lodge in Moran, Wyo., was coated with black and brown Kemiko stains to help the structure blend with the Teton Range. The structure is not only still intact, but "the concept is growing stronger each day," she maintains.

**Upcoming workshops:** 

Bob Harris will be conducting one more workshop Nov. 8-9 this year featuring Kemiko products. In 2006, workshops are scheduled for Feb. 9-10, April 6-7, June 29-30, Aug. 10-11 and Nov. 2-3. All workshops are held at the DCI facility in Douglasville, Ga. For more information, visit www.decorativeconcreteinstitute.com.

Sargent says when she first began marketing Kemiko products nearly 10 years ago, she thought concrete staining was, for the most part, applicable for industrial and commercial settings. Still, she thought there was a place for it

in the residential market.

"I thought concrete was a low-point price product that might fill a niche for low- to moderate-income levels," Sargent says, "but I was wrong. Once I started marketing it to homeowners, I realized it was consistently being used in higher-end projects."

The reasons are many. Concrete costs less than the materials it mimics, such as slate and marble. It's easy to maintain and there are no down-the-road replacement costs like the ones homeowners experience with carpet and vinyl. It's a great flooring product for those with allergies and pets.

"And people appreciate it for its sheer natural beauty," Sargent sums up. "None of these reasons conjure up a fad. I think concrete flooring is here to stay. The customers like the look and feel of the product, and their checkbooks like the savings."

For more information visit www.kemiko.com.





# Sales Manager Brings Decorative Concrete Home

by John Strieder

ect Profile

im Higginson is not just a decorative concrete sales manager, he's also an enthusiast.

"When my wife Madge and I set out to design and build a new home, I wanted to incorporate as many concrete design features as I could get away with!" writes Higginson in an email to Concrete Decor. "Although Madge was somewhat skeptical at first, she soon was won over by the almost infinite possibilities of concrete inside!"

Higginson, sales manager for Valley Rite Mix Ltd., a division of Lafarge, was eager to work Lafarge materials into his new home, a four-bedroom, 6,000-square-foot house recently



completed in Abbotsford, B.C., near Vancouver. "This project was a great way for me to showcase a couple of Lafarge products that I am very near and dear to," he writes. "I decided to marry two of Lafarge North America's popular new products, Agilia, Lafarge's successful self-consolidating concrete brand, and Artevia, our decorative concrete line. Having sold Agilia for many different applications around the Greater Vancouver area for many years now, I wanted to prove what I always suspected, Agilia's capability in decorative applications."

The self-leveling Agilia was used for all interior concrete work, while Artevia colors tinted the interiors and

#### **Basement:**

Wine cellar and hallway — Agilia Horizontal 5 mm aggregate, Standard Ledgestone color, 12-inch-by-12-inch Concretech Princeton Slate Tile stamp.

**Bedroom suite** — Agilia Horizontal, Artevia Earthtone Stone color, 10-inch Concretech Wood Grain stamp, acid stain.

**Family room** — Agilia Horizontal, Artevia Earthtone Stone color, Decorative cuts, acid stain.

#### **Main floor:**

**Floors** — Agilia Horizontal 5 mm, Artevia Standard Limestone color, poly fibers, Scofield Fractured Earth stamp, acid stain.

**Hearths (cast-in-place)** — Agilia Horizontal, Artevia Standard Slate color, Scofield Fractured Earth stamp.

Countertops (cast-in-place) — Agilia Horizontal 5 mm aggregate, poly fibers, Tetraguard (Degussa shrinkage-reducing admixture), Artevia Executive Limestone color, diamond ground, fine sand, polish.

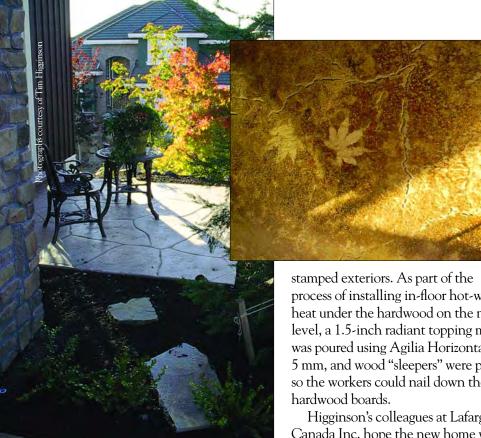








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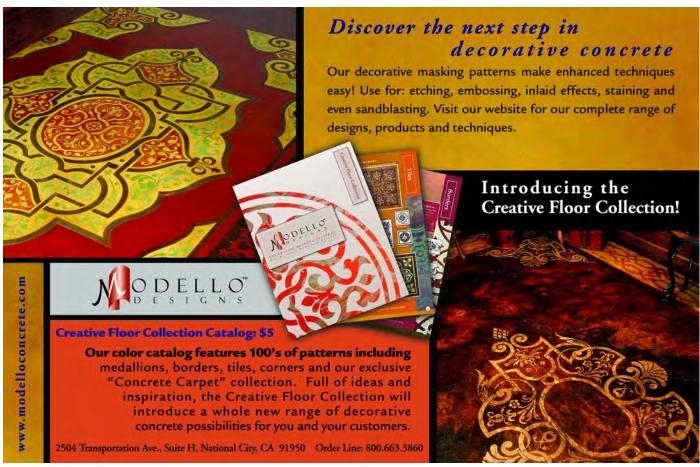


process of installing in-floor hot-water heat under the hardwood on the main level, a 1.5-inch radiant topping mix was poured using Agilia Horizontal 5 mm, and wood "sleepers" were placed so the workers could nail down the

Higginson's colleagues at Lafarge Canada Inc. hope the new home will turn some heads. "Lafarge is actively promoting color and decorative concrete work in Canada as well as the United States," says Ian Paine, readymix marketing director for Lafarge Canada's Western Canada Region. "In western Canada, this is one of the more progressive houses when it comes to decorative concrete."

The Higginson home is located on a former "Street of Dreams" street in the desirable Eagle Mountain residential community, and the sidewalks in front of the house sport stamped patterns as well.

Decorative concrete will become more common throughout Canada in the next few years, according to Paine. "The trends we've seen in the last four, five and six years, in the southwestern U.S. and spreading into California, of the use of concrete as a decorative finished product, they're translating over the border finally."



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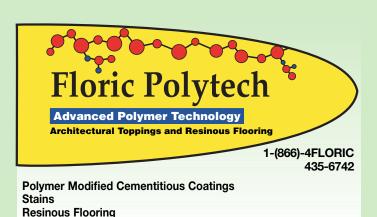


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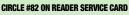
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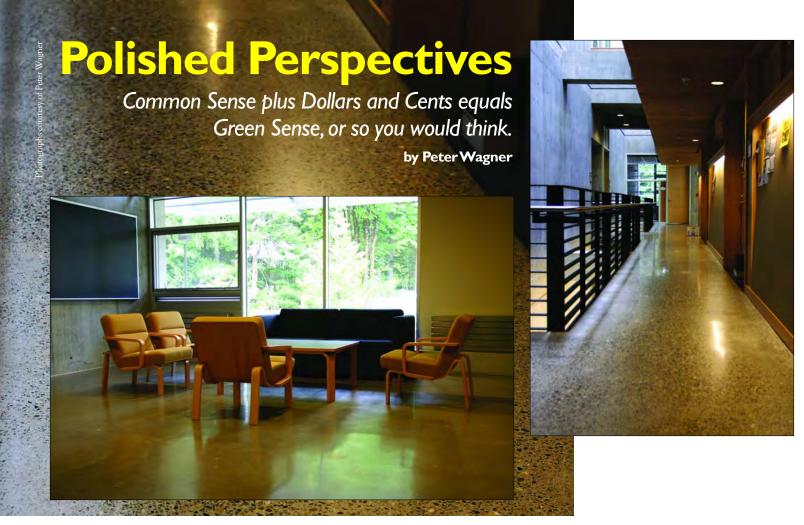
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enerally when we think of "building green," we think of the LEED program from the U.S. Green Building Council (USGBC). LEED, which stands for Leadership in Energy and Environmental Design, is the buzzword of the day in sustainable building practices, as well it should be.

Or should it? Though its quest is noble, does it come up short in its execution? Let's take a look at both the LEED program and how polished concrete fits the philosophy — if not the stated criteria — perfectly. If you gain nothing else, I want each of you to be proud of the product and process that you provide to your customers, and I want you to have both the knowledge and comfort level to be a cheerleader for the industry. We are "green," and our process does make sense, both today and tomorrow, even if the existing LEED criteria leaves us on the outside looking in. Even the addition of an acid stain is only a blip on the radar, and does not

prohibit a property from gaining certification if all other criteria are met. Polished concrete shouldn't be judged by what it doesn't deliver (VOCs, material in a landfill, etc.), but conversely by its positive environmental impact, both today and tomorrow.

LEED is the USGBC's certification process used to evaluate the environmental performance of a building. When the program was started by a group of government agencies, it was only utilized to judge new buildings. Today, there is a wide range of building categories that can pursue LEED classification, including both new and existing properties. But despite the nearly 100 million buildings in the U.S., LEED has certified fewer than 200 buildings since 2000, with 1,772 projects registered but not certified, according to Randy Udall and Auden Schendler in their recent article, "LEED is Broken — Let's Fix It," on iGreenBuild.com.

The intent for LEED is to not only be a certification program (Certified,

Silver, Gold and Platinum) for sustainable building, but also a philosophy that guides design and construction professionals during the design process. The goal of this certification program is to provide a sense of direction for designers that will minimize the impact of building, both today and in the future. Within the certification process there are five areas, or credit categories: sustainable sites; water efficiency; energy and atmosphere; materials and resources; and indoor environmental quality; plus a bonus category: innovation and design process. Following the completion of the project, an independent evaluator establishes the credits received and the level of certification a property receives.

At the beginning of this column, I stressed common sense, dollars and cents, and "green" sense. Stop and think about it. On the surface, shouldn't common sense tell you that green sense and the categories for LEED



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certification share the same values? That being green shouldn't be so narrowly focused that installing a low-VOC floor covering or coating earns credits, but that not putting down any covering or topical treatment at all doesn't earn any points? Is this common sense or nonsense? Let's state a very important fact: Polished concrete is one of the best, if not the best, approach to flooring from the Green sense.

When I was a certified applicator for the RetroPlate System in the Pacific Northwest, prior to joining the company as their marketing director, my company was involved in several projects that were designed to meet LEED criteria — both polished concrete only, and polished concrete with acid stain.

In our meetings with the project manager and architect on one project, it was deeply ingrained in us that: 1) this certification was very important to the owner, Evergreen State College in Washington; and 2) that the guidelines for what could and couldn't be carried onto the job site were going to be stricter than any other job site we had ever been on. This project team was committed to the environment, even with initial costs being 1.5 percent to 3 percent more to build an environmentally conscious building.

Looking back at the project, where my initial pride was for being a component of their success, I now find out that it was more for what I didn't bring to the project. In a conversation with a LEED AP (accredited professional) in Seattle last week I was gently brought down to earth when he told me that the only area where we actually could potentially contribute to credits on a project was in the area of VOCs, and this will only be after LEED 4.2 is passed. Currently, under LEED 4.1, we bring only common sense and longterm environmental and dollars-andcents savings.

From a common sense perspective, here's how we meet or exceed the intent of LEED, if not the reality of it:

#### **Optimize Energy Performance**

- Polished concrete allows the advantage of utilizing the thermal mass of concrete in heating and cooling.
- Polished concrete provides the ability to increase the benefit of ambient natural lighting and/or reduce the required lampage.

#### **Building Reuse/Construction Waste** Management/Recycled Content

- Existing Buildings what is better environmental stewardship than to reuse the existing floor?
- New or Existing Buildings we are not wasting the materials or energy required to produce a floor covering or topical coating.

#### VOC/IAQ/Long-term Maintenance

- Polished concrete has zero VOC content.
- Many studies indicate that indoor air quality is enhanced with properly maintained hard surfaces vs. carpet.
- Polished concrete does not support combustion, nor does it produce smoke or toxic fumes.

#### Life Cycle Cost

 Third-party sources show polished concrete to be the lowest life-cost flooring option available.

Polished concrete makes common sense for the environment, while making dollars and cents for the building owner. Having your company be a leader in environmental sense will make dollars and cents for you, your employees and your community.

Peter Wagner is the marketing director for RetroPlate and is responsible for working with RetroPlate's Certified Applicator network throughout North America. He has more than 20 years experience in the flooring industry.

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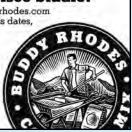
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# PRODUCT PROFILES

#### Wagman plastic blades for power trowels Manufacturer: Wagman Metal Products Inc.

ith all due respect to "The Graduate," sometimes the future really is in plastics.

Take, for example, this anecdote from Wagman Metal Products Inc. marketing manager Robert Bower: A huge discount superstore chain is planning to install concrete floors colored with an antique cork hue in many of its new locations. Their design scheme calls for a little bit of mottling and burnishing to add character, but not enough burnishing to leave ugly black marks.

Wagman's plastic trowel blades for power trowels are the tools that make this possible. The chain is in the process of adding the blades to their job specs, Bower says. "What they're doing is they're running steel until they get the look they want. Then they are switching over and using plastic blades."

Wagman plastic blades leave a hard, polished finish up to the standards of steel, but without the dark burnish marks that tend to show up when steel spins against concrete. This makes them a boon for decorative concrete contractors, who have more motivation to avoid unsightly black scuffs than just about

anybody else in the industry. "Plastic will not leave burnish marks no matter how often they go over and over a hard surface,"

Bower says.

Wagman introduced its first plastic trowel blade in the late 1990s, and the manufacturer unveiled a new generation, the Poly Pro, last year. The Poly Pro's plastic blade is reinforced with a steel plate, combining the finishing capabilities of plastic with the rigidity, strength, and reliable flex points of steel. The reinforced blades can be used with heavier power trowels, and come in finish and combination blade styles.

Wagman still sells its original plastic blade without the steel. A third option, the DPRO, is made from stiffer, denser plastic than the other two. It's the most expensive of the three.

The plastic in a Wagman blade was engineered to be abrasion-resistant. If it's regularly used to float and finish, it may wear faster than a steel blade doing the same job, Bower says, but if it's used only for finishing, it may last longer than steel. The Poly Pro can also be equipped with a steel clip-on float blade that covers the plastic, protecting it in the earlier phases of the job.

"There is no way to finish floors that are highly polished without burning them unless you get down on your hands and knees and finish it by hand," Bower says. "You can get away with doing it that way, but it is very labor intensive."

For more information, visit www.wagmanmetal.com or call (717) 854-2120.

#### DP-600 Concrete Repair crack fillers Manufacturer: 3M

P-600 Concrete Repair products from 3M offer a fast way for concrete repair people to get their fill.

"The speed is the big deal," says Dean Lovett, business development supervisor for 3M's Industrial Adhesives & Tapes Division.

A typical concrete repair product can force contractors to wait 24 hours before they can get onto the newly repaired surface, he says, while an epoxy repair product may make them wait for days. Not so with a DP-600 crack filler. In as little as five minutes, it's hard. In roughly 15 minutes, it can stand up to a forklift. After as little as an hour, it can be painted.

The DP-600 crack fillers are the centerpieces of 3M's Concrete Repair collection, and they come in horizontal and vertical versions. DP-600 Self-Leveling is designed for floor crack fills, and as its name suggests, does not typically require smoothing. DP-600 Nonsag (or NS) is made for cracks on walls. Both are fast-curing urethanes, leaving a crack fill that will be at least as strong as the concrete. At the same time, the urethane is not as rigid as an epoxy. It has just enough flexibility to give the repaired crack some give when the surrounding concrete expands and contracts. "It reduces the tendency to crack again in that same area," Lovett says.

The material will harden to any depth without cracking or shrinking, and it is solvent-free. It is so strong that it can also be used to anchor bolts and screws. And as a urethane, it will take most paints. "I have yet to find something that is not compatible," Lovett says.

The DP-600 fillers are packaged in a duo-pack tube similar to those used with epoxies. DP-600 Self-Leveling is also sold in a two-compartment caulk cartridge with a mixing nozzle. This cartridge fits in a regular caulking gun, but it holds only 8.4 fluid ounces of material, compared to 12 fluid ounces in the duo-pack tube package.

The DP-600 came out in the duo-pak in 2003, and the caulk cartridge debuted in late 2004. "It is definitely new to the decorative concrete scene as this is a new market for us," Lovett says.

For more information, visit www.3m.com/adhesives or call (800) 362-3550.



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#### **Polishers**

#### The X factor

HTC Professional Floor Grinding Systems has improved its top-selling grinding and polishing machine, the HTC 800 HD.

The new HTC 800 HDX has four heads, instead of three. Its hydraulic-assisted integrated weight system

replaces stackable horseshoe weights that had to be placed by hand. The weights are shifted on or off the heads via a three-position slide switch that also includes a setting for actively weighting the heads away from the surface, a handy feature for use on polishing resins.



The improved model also features a heavier grinder that adds 336 pounds to the machine for a total weight of 1,150 pounds. Its sleeker design incorporates integrated hoses; its 20-horsepower motor is 5 hp stronger than its predecessor; and its hub-type heads last three times longer than the bearing-type heads on the 800 HD and other planetary grinders. Two of the four heads spin clockwise and two counterclockwise, canceling out the force that is otherwise placed on the operator's arms.

For more information, visit www.htc-america.com or call (877) 482-8700.

#### Four heads with teeth

With its 32-inch four-headed design, the new Predator Grinder from Innovatech Products & Equipment Co. is ready to prey on unpolished concrete.

The fourth planetary grinding head gives this machine more production and stability. It can polish concrete wet or dry and remove coatings, thin set,

sealers and adhesives. The machine is advertised as yielding 30 percent more production compared to similar-sized machines with only three heads.

Innovatech plans to release a 24-inch four-headed Predator Grinder later this year. For more about the Predator line, visit www.innovatechproducts.com or call (800) 267-6682.

#### The perfect storms

Innovatech Products & Equipment Co. helps grinding/polishing machines get their shine on with a series of resin-bond diamond pads and discs for polishing.

Hurricane Polishing Discs are designed for long life and high-gloss finish. A newly designed pattern removes swarf and allows polishing into difficult angles in corners and walls. The discs come in 3-inch or 4inch models.

Tornado Wet/Dry Pads are also designed for long life and high-gloss finish. As their name suggests, they work well on both wet and dry concrete. The phenolic resin-bond diamond discs come in 2-inch and 3-inch models.

Super Thick Polishing Discs are designed for long life and swarf removal. They work well polishing concrete and on wet or dry terrazzo, and they come in 3-inch or 4-inch models.

For more information, visit www.innovatech-products.com or call (800) 267-6682.

#### Three heads, no pull

Designed for cement, marble, granite, terrazzo and other stone floors, the Cimex CR48 Diamond Finisher allows successive stages of stone floor preparation or restoration to be completed more rapidly and with less effort than is possible with conventional methods.

The heavy-duty planetary motion machine utilizes the patented, Cimex three-headed counter-rotating system. The counter-rotating system produces greater stability and eliminates the pulling action found in

single-head machines that causes operator fatigue. The machine maintains constant pressure and avoids uneven cutting and rotational scoring. A 6.5-gallon solution tank allows uninterrupted usage in wet applications.

The CR48DF comes with a 2 hp motor and weighs 132 pounds. It offers a head speed of 880 rpm, but 400 rpm head speed is available on request. For more, visit www.cimexusa.com or call (866) 284-3255.



#### Floating heads

The SASE 780 Pro Diamond Grinder, an improved version of the SASE 780, comes with integrated floating head technology as a standard feature. Formerly available as an add-on, the integrated floating head design allows the grinding-polishing tool to ride

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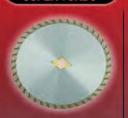




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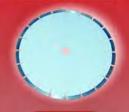
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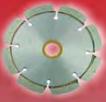








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the contours of a floor. A more rigid machine might scour the cream off the rises in a typical concrete floor while leaving low areas comparatively untouched.

Like its predecessor, the SASE 780 Pro is a planetary

three-head machine with controlled counter-rotation. It weighs 1,100 pounds, making it the heaviest of its kind in the market. It has a 20 HP motor, 30.5 inches of grinding width, can get within one inch of a vertical surface and requires little maintenance.

SASE Co. Inc. says the 780 Pro is the most productive polisher of its type in terms of square footage worked in a given period of time. SASE also boasts the most combinations of diamond, metal and resin head tooling.

For more details, visit www.sasecompany.com or call (800) 522-2606.

#### **Orbiting planets**

The DS301 Planetary Polisher from Intertool is a true planetary gear driven tool designed to produce a flat, swirl-free finish on counter tops, floors, walls and steps. The 12-inch platform turns at a lower rate than the higher rotational speed of the 5-inch platens. This rpm provides the optimal

speed for diamond polishing, producing a perfect finish five times faster than a single head polisher. The unit is powered by a heavy-duty FEIN variable speed polisher. It comes with a center coolant feed and precision bearings, and it can



be operated wet or dry with an optional dust cowl.

The DS 600 is a twin planetary grinder/polisher. The planetary design allows ease of operation without the directional pull found in conventional floor machines. Each planetary has three rotating heads, for a total of six. For

polishing, 5-inch Velcro backup platens allow easy attachment of diamond polishing discs.

The DS 600 is designed to operate at the same grinding and polishing speeds as single-head power units. The advantage of speed is that less weight is needed

for the diamonds to perform, and less weight means less power is required to operate.

For more information, visit www.inter-tool.com or call (800) 926-9244.





# Product News

#### **Tamp or stamp with Proline**

Proline Concrete Tools Inc. has released a new border stamp, called Spanish Flair, and an improved tamper.

Spanish Flair joins the Proline family of border stamps, which includes patterns such as Grapevine, Dolphins, Autumn Ivy, Hawaiian Flower, English Rose and Fleur-de-Lis.



Designed to be used in decorative borders, the stamps are placed, then covered with a texture skin, and both are imprinted together. The stamps can follow free-form con

can follow free-form contours and straight-line borders.

The improved Proline tamper features a new shock-absorbing design that reduces stress on the arms and back. The base is self-aligning and lands flat even if hit at an angle. It has an

extra-long grip and comes in 12-inch and 16-inch sizes.

For more information, visit www.prolineconcretetools.com or call (800) 795-4750.



Degussa Admixtures Inc. is using Master Builders technologies to develop contractor-friendly pervious concrete mixtures that improve performance. Ready-mix



concrete producers looking to enter the rapidly expanding market for pervious concrete can ask Degussa Admixtures for help with products and mix designs.

Pervious concrete is a mix of portland cement, coarse aggregate, water and admixtures. Due to its lack of fine aggregate, its pore structure contains many voids that water can pass through.

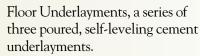
Interest in pervious concrete has spiked with recent changes in federally mandated stormwater management

regulations. Other benefits include easy discharge from the truck, increased working time, improved placeability without adding water, reduced paste drain-down, and increased compressive strength upon hardening.

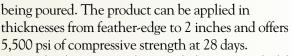
For more about Degussa Admixtures solutions for pervious concrete, visit www.degussaadmixtures.com or call (800) 628-9990.

#### Get on the floor

The Industrial Products Division of United States Gypsum Co. has introduced Levelrock Brand SLC



Levelrock SLC 200 Floor Underlayment is a portland-based cementitious underlayment that sets quickly. Ideal for use over concrete and wood substrates with metal lathing, it can handle light construction traffic 24 hours after



Levelrock SLC 300 Floor Underlayment is ideal for leveling or topping rough and spalled concrete when downtime is critical. Designed for commercial, institutional and rehab construction, this polymer-modified engineered cement is self-drying and moisture-resistant, and it will accept floor coverings after 24 hours. It can be applied in thicknesses from feather-edge to 1½ inches and provides 4,350 psi of compressive strength at 28 days.

Levelrock SLC 400 Floor Underlayment is a premium, self-drying cementitious wear surface designed to act as either a final floor or high-performance underlayment. The polymer-modified product sets quickly and is recommended for high-traffic areas, including manufacturing facilities and warehouses. It can be applied in thicknesses from feather-edge to % inches and offers 4,350 psi of compressive strength at 28 days.

For additional information, visit www.levelrock.com or call (800) 487-4431.



#### New in the mix

Overlay distributor
Architectural Concrete
Supply Inc. has started selling
its own line of overlayment
products under the name
Architectural Enhancements.

The line of decorative and faux solutions includes several products with brand names. Vertex is a vertical stamp texture mix that can be applied up to three inches thick to create faux rock and masonry effects, Cultured Tru-stamp stamp texture allows early stamping, holds moisture content longer and offers great workability. Tru-finish, a versatile product, can be

sprayed on or troweled down, vertically or horizontally.

Architectural Finish is a microtopping with strong marbleization and coloring characteristics.



The line also includes acid stains, liquid and powdered colors and a sealer that is more than 50 percent solids.

For more information, visit www.decorativeoverlayments.com or call (952) 233-2726.

#### Oh you beautiful doll

The new Sawtec Grinder-Vac Dolly from Blastrac is a wheeled frame that reduces concrete-grinding fatigue while



improving productivity.

The Grinder-Vac Dolly's wide stance allows greater stability and control. Handle positions allow use from either the left or right side. The forward handle is located directly over the grinding

head for precise control, while pneumatic shock absorbers keep the grinding head in contact with the surface. A quick-tilt adjustment shifts the grinder to reach low areas or dips. Swivel casters rotate 360 degrees for maneuverability.

For more information, call (800) 256-3440 or visit www.blastrac.com.

#### Look into the future

Simulated Artistic Layout Engraving Software (S.A.L.E.S.) is new from Engrave-A-Crete Inc. The Windows-based software allows decorative concrete engraving contractors to simulate a nearly unlimited variety of colors, patterns, textures and designs within a digital photograph of a proposed concrete engraving project.

Decorative concrete contractors can work interactively with customers in the on-screen design of proposed projects. Instant pattern changes show customers how a surface will look as brick, tile or stone, with or without pictorial inlays. The simulation software is expected to be a helpful sales and marketing tool that will increase sales of custom designs.

For more details, call (800) 884-2114 or visit www.engraveacrete.com.

#### **Become detached**

Huron Technologies Inc. is offering a new mold release coating for molded concrete products.

Concrete molders will find Mold Release Coating 6310 a welcome relief from low-grade



release coatings such as diesel fuel or fuel oil. The biodegradable, solvent-free, nonsilicone coating can be used on all molded concrete products and is designed for fast cleanup with water. It is sold in 5-gallon containers and 55-gallon drums.

For more information, call (800) 275-4902 or visit www.hurontech.com.

#### Rope plus tube equals a new look

A craftsman in California created unique-looking architectural column reveals by tying rope around the outside of a Fast-Tube column form.

Fast-Tube's subtle fabric texture helped achieve a more natural, artistic look than the distracting mechanical spiral lines that come with cardboard forms. Credit for the innovation goes to Mark West of CAST (Centre for Architectural Structures and Technology, Winnipeg, Manitoba) and Troy Rutherford of Foresthill, Calif., who put West's idea into action. "I wanted an Old World look to the columns," said Rutherford in a Fast-Tube news release. "That's why I used nylon rope to create the rings. I then stained the columns 'Malaysian buff' to match the floor."

Fast-Tube is distributed by Fab-Form Industries Ltd. For more information, visit www.fab-form.com or call (888) 303-3278.

#### Palm power

Two new Prep Crew scrub brushes from Wooster Brush Co. have "sander-style" handles for extra power.

The new handles are made of splinterproof polypropylene, and their smooth, curved, ergonomic shape fits the palm better, allowing users to press more firmly when scrubbing. Compact heights and pointed ends help the brushes get into tight spaces. Ergo Wire Scrubber is packed with industrial treated wire for removing flaking paint, rust, and scale, while Ergo Super Scrubber has a high-performance mix of fibers for faster cleaning. Both brushes offer bristles in staggered tufts to eliminate rake marks and provide better coverage.

For more information, visit www.woosterbrush.com or call (800) 392-7246.

#### Tough, not tacky

Flexane Fast Cure Rubber Repair Putty from Devcon is newly formulated for greater tear resistance.

The urethane compound is ideal for filling control joints in concrete or metal and forming protective linings in machinery as well as repairing worn conveyor belts and other equipment. It bonds to rubber, metal, concrete, fiberglass, and



wood, curing to a tough, medium-hard rubber. It is tack-free in 30 minutes and ready for light-duty service in 3 hours or less.

For more information, call (800) 933-8266 or visit www.devcon.com.

#### New power generation

Hitachi Power Tools has released a new line of generators and an air compressor.



The Hitachi E43, E60 and E71 generators offer a range of power production levels. The E43 offers 4,300 watts and 35.8 amps, providing sufficient power to operate multiple tools. The E60 offers 6,000 watts and

50 amps. Finally, the E71 offers 7,100 watts and 59.2 amps, enough power for almost any needs at a job





site. Each model features four Grounded Fault Interrupter (GFCI) receptacles for safe

operation in outdoor environments, two twist locks (one on the E43) to prevent power supply interruption, and a rugged mobility cart equipped with oversized tires and a lift hook.

The new air compressor, the EC2510E, is a 5.5 hp gas wheelbarrow model with a cast iron pump, base-plate integrated control panel, oversized oil



level sight glass and pneumatic engine throttle control. The compressor cycles from 116 psi to 145 psi.

For more information, call (800) 829-4752 or visit www.hitachipowertools.com.

#### More from Mi-T-M

Mi-T-M Corp. has introduced a new full line of portable generators for the rental and construction industries.

Featuring three inverters and 15 standard models, the new line includes inverter technology generators that range from 1,650 watts to 4,300 watts. These models offer compact design, low



noise levels and smooth wave form power. Also, an industrial product line includes units that range from 2,500 watts to 13,000 watts. Features include a new isolator design, extended fuel tank capacity and solid-state circuitry.

For more information, call (800) 553-9053 or visit www.mitm.com.



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CIRCLE #112 ON READER SERVICE CARD

# The Final Pour



#### Table Talk

rchitect Bjorn Ollner met Gary Jones while they were both working on a pirate museum in the Bahamas (and if you know Gary, that doesn't seem like an odd place to find him). Ollner started his career in Sweden designing free-form concrete houses, then moved to Vancouver and got into the film industry, designing futuristic vehicles for a number of well-known feature films.

After meeting Jones, he began using Colormaker products to create artistic concrete floors and wall panels. He's making tables too, to be used indoors since the dyes and pigments aren't made to withstand the elements. Here's what he says about his process:

"I usually work with wet surfaces so the colors can blend like in a watercolor painting. It's hard to foresee exactly what is going to come out of the process, but that is part of the fun. Also, no piece is like the other one.

"The wet working surface makes for a smooth finish, which is good for a table top. I can see endless possibilities for this type of colorful concrete art — both for floors, walls and furniture. It can work in private homes as well as lobbies, boutiques, hotels and restaurants. We just have to educate the public about the potential and the products available."

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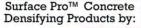
Diamond Tooling



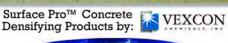


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