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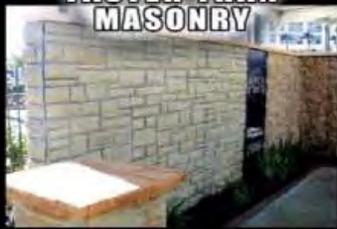
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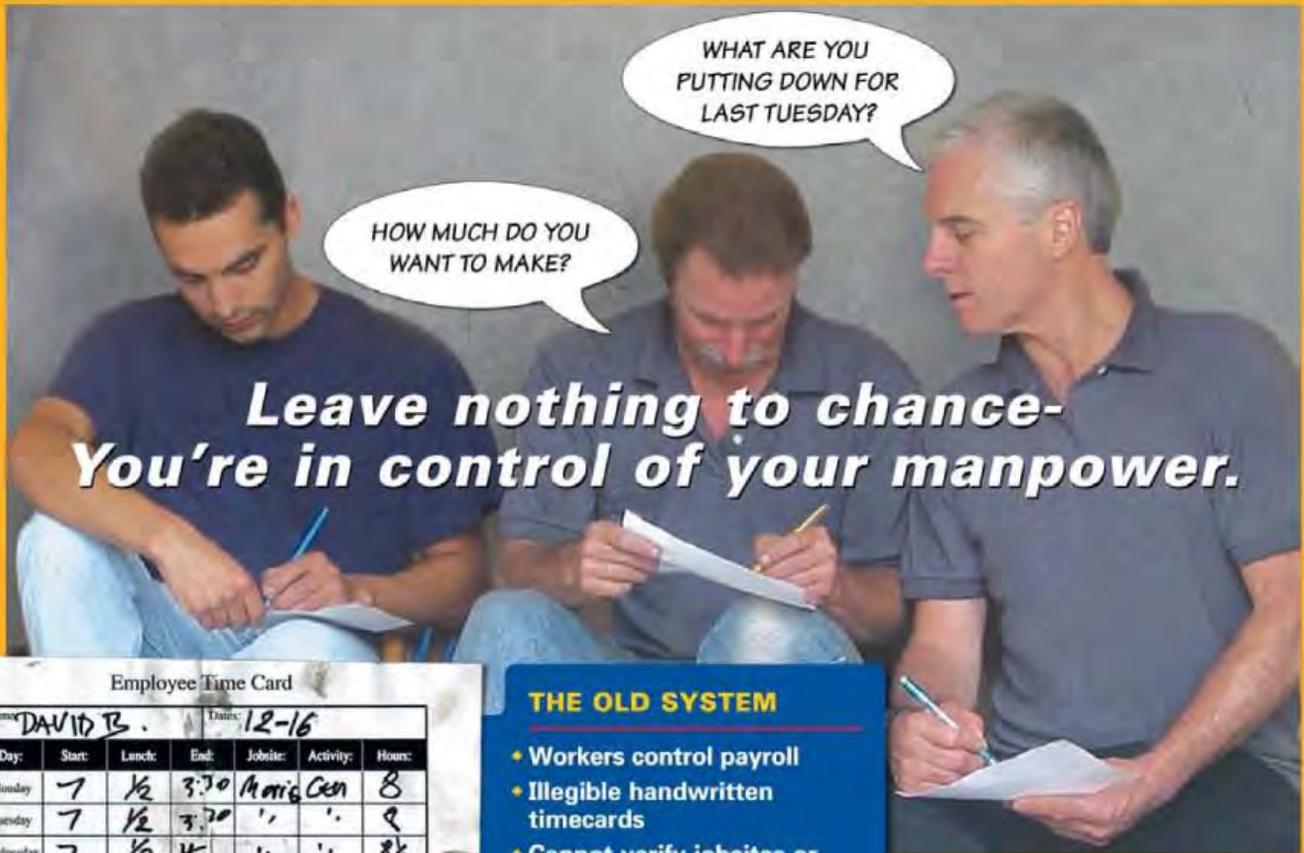
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Day	Start	Lunch	End	Jobsite	Activity	Hours
Monday	7	1/2	3:30	Morris Cen		8
Tuesday	7	1/2	3:30	'	'	8
Wednesday	7	1/2	4	'	'	8 1/2
Thursday	7	1/2	4	'	'	8 1/2
Friday	7	1/2	4	'	'	8 1/2

Employee Signature: *David B.* Total Hours: **41 1/2**

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Employee Report

David Burns

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Day	Start	End	Activity	Hours
Mon 6/12	7:08 AM	12:05 PM	Prep	4:57 hours
	12:41 PM	3:22 PM	Prep	2:41 hours 7:38 hours
Tue 6/13	7:12 AM	12:07 PM	Formwork	4:55 hours
	12:43 PM	3:23 PM	Formwork	2:40 hours 7:35 hours
Wed 6/14	7:12 AM	12:02 PM	Formwork	4:50 hours
	12:46 PM	3:49 PM	Formwork	3:03 hours 7:53 hours
Thu 6/15	7:17 AM	12:19 PM	Texture/Seal	5:02 hours
	12:50 PM	3:46 PM	Texture/Seal	2:56 hours 7:58 hours
Fri 6/16	7:13 AM	12:07 PM	Texture/Seal	4:54 hours
	12:44 PM	3:38 PM	Texture/Seal	2:55 hours 7:49 hours

Employee total **38:53 hours**

Signature: *David Burns* David Burns

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Dear Readers,

As you explore this new issue of *Concrete Decor*, you'll find that interest in concrete as an architectural finish is growing both vertically and horizontally. Concrete is gaining vertical ground in the U.S. as a preferred "green" building material that offers the best in aesthetics, durability and long-lasting finishes. (See our story on the use of reactive stains on tilt-up walls, page 22.) Horizontally, the term "decorative concrete" (and its wide range of applications for new and existing concrete) has spread overseas and is now becoming a buzzword in foreign markets too. For obvious reasons, concrete with color and texture is getting noticed more and more every day.



Just last month, while I was running off to Italy to cover a training event at Ideal Work (see my account of the trip on page 14), our contributing writer Doug Carlton was in Beijing at World of Concrete Asia, where he gave a decorative concrete seminar to an enthusiastic group of contractors from 75 countries. (See Carlton's Corner on page 54.) My travels last month also took me to Mexico City for a visit to World of Concrete Mexico. Here too, it is apparent that the use of concrete in construction is growing, due both to its structural integrity and its ability to add beauty to its surroundings.

There's no denying the fact that concrete, a substance with both staying power and sex appeal, is the preferred choice for many builders around the world. It's our opinion that this is not simply a building trend, but rather, an environmentally responsible solution for generations to come.

As always, it is *Concrete Decor's* sincere pleasure to be of service to your business as well as a tool for exciting your sense of creativity.

Sincerely,

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Concrete Decor now features the industry's ultimate online 'search' tool for finding just about anything related to decorative concrete. Start by logging on to www.concretedecor.net. At the top of the page simply enter a keyword such as stencils,

integral colors, admixtures, rock features, concrete repair, etc... In less than a second we'll search over five years of articles and information from the pages of *Concrete Decor* and provide you with an extensive list of results.

While online, you owe yourself the pleasure of ordering *Concrete Decor's* new virtual magazine. The digital magazine arrives weeks ahead of the printed edition. Each issue is stored on your computer for easy reference online or off, the pages turn on your computer screen with a simple mouse click, and clicking on ads takes you directly to the advertisers' Web sites. Best of all, a subscription to the digital magazine is only \$14.95 anywhere in the world.

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Features

14 Viva Italia!

Our publisher goes on a whirlwind trip to Italy and finds that European contractors are eager to learn more about decorative concrete.

by Bent Mikkelsen

22 Reactive Stains go Vertical

Discover why vertical staining is catching on despite some application challenges.

by John Strieder

28 Project Profile:

Potawot Health Village

Is it redwood or is it concrete? A Sacramento contractor creates a Native American health center with reactive-stained walls.

by John Strieder

30 Countertop Reinforcement

Reinforce your knowledge and make structurally strong concrete countertops.

by Susan Brimo-Cox

34 Jump in! Concrete Pool Decks

Beyond the beauty of its surface, a well-made pool deck can keep your customers cool and safe.

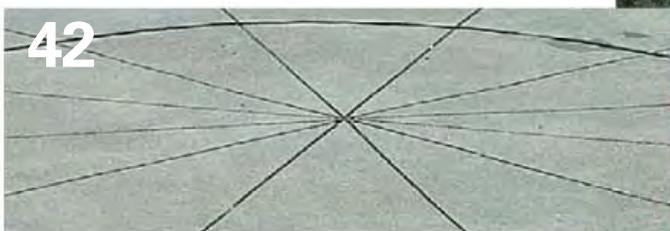
by Amy Johnson

42 Control Your Cracks

Tips for mastering the art of joint placement.

by Stacey Enesey Klemenc

On the Cover: Bill Goff and Mike Murray of Tom Ralston Concrete get a lift while acid-staining a house in Northern California. After applying stain with gas-powered sprayers, they quickly followed with a hard brushing using circular motions. The crew used this method to stain more than 35,000 square feet of surface for this concrete home.



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Departments

8 Industry News

18 Artisan in Concrete: *Floor Seasons*

Cary Grant (no, not that Cary Grant) went from making his living stripping floors to discovering a passion for concrete staining.
by Mike Dawson



46 Polished Perspectives:

Design and Performance

An in-depth study on mix design for polished concrete.
by Peter Wagner



50 Tooling: Vibrators

52 Technology: *Air Entrainers*

Take the pressure off with air-entraining agents.
By Mike Dawson

54 Carlton's Corner

Doug Carlton writes about his trip to the first-ever World of Concrete Asia.



56 Business Strategies:

Customer Service

Contractors share customer-service tips that help make their businesses successful.
by Wendy Ardolino



58 Product Profile: *Dye-N-Seal*

60 Product News

64 Association News

72 Final Pour: *Backyard Beach*

66 Concrete Marketplace

71 Classifieds



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Industry News



Fu-Tung Cheng

Cheng joins the NKBA Hall of Fame

Fu-Tung Cheng has been inducted into the National Kitchen & Bath Association's Hall of Fame. The program recognizes kitchen and bath industry professionals for their outstanding service and long-term dedication to the industry. Inductees were honored at the annual Kitchen/Bath Industry Show & Conference in Chicago, Ill. The Kitchen & Bath Industry Hall of Fame currently has 70 inductees — from inventors to innovators to designers.

www.kbis.com

Cemstone grows, hires new staff

Cemstone has acquired Lambert Ready Mix in Carlton, Minn. Cemstone currently has ready-mixed concrete plants in Aitkin, Isle and Pequot Lakes, Sandy Lake and Rock Creek, and this acquisition will strengthen

Cemstone's customer service throughout the region.

Mark Keogh has been named the company's controller. Prior to joining Cemstone, Keogh was vice president of finance at John Henry Foster, Eagan, Minn.

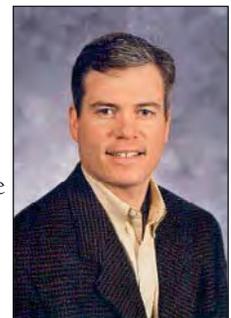
Also, John Thompson was named plant manager of Cemstone's ready-mix plant in East Bethel, Minn. Prior to joining Cemstone, Thompson was a manager at Marshall Concrete Products in Minneapolis.

Clint Bogard was hired as an account representative for the company's Northwest sales region. Bogard will be responsible for sales to commercial, residential and contractor supply customers throughout the region. Prior to joining Cemstone, Bogard was president of Granite City Ready Mix in St. Cloud, Minn.

Founded in 1927, Cemstone operates more than 40 ready-mixed concrete plants in Minnesota and western Wisconsin, and sells contractor supplies and materials through 16 contractor supply stores.



Mark Keogh



Clint Bogard

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CEMEX honors outstanding achievement

In its first-ever U.S. awards competition, CEMEX Inc. honored 12 finalists for outstanding achievement in construction and design at the inaugural CEMEX Building Awards ceremony, held in May at The Corinthian in Houston. Three projects were selected as best in the nation, and their designers, contractors and engineers were

Consider This

"Sharing successful practices and tips is good for the industry. None of us are as good as all of us."

— Doug Carlton.

You'll find Doug's reflections on his trip to World of Concrete Asia on page 54.

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awarded the U.S. title in the Housing, Institutional/Industrial, and Infrastructure project categories.

The award recipients were recognized for use and application of concrete, innovation, execution of the project, architectural or structural design, urban concept and the attention and respect for the environment displayed by the builder, architect or engineer. The recipients will later compete against winners from approximately 30 countries for the world title at the 15th CEMEX International Awards to be held in Monterrey, Mexico in November.

The three award winners were:

Housing Award — Fremont Mews Apartments in Sacramento, Calif. Fremont Mews provides a unique blend of mixed-income housing with reserved open space to create a vibrant urban residential experience. The general contractor was JR Roberts Corp., and the concrete contractor was RJS & Associates.

Infrastructure Award — Santana Row in San Jose, Calif. Santana Row combines high-end residential, office and retail in a charming and unique architectural style. It was designed by SB Architects. The concrete

contractor was RJS & Associates, and the general contractor was Bovis Lend Lease.

Institutional/Industrial Award — The CalPERS Headquarters Building in Sacramento, Calif. The recent expansion of Lincoln Plaza included a new 660,000-square-foot headquarters for the California Public Employee Retirement System (or CalPERS). The building was designed by Kendall/Heaton Associates. Contractors were Hensel Phelps Construction Co. and SJ Amoroso Construction Co.

CEMEX operates 12 cement plants across the United States, and more than 300 concrete plants, making it the largest cement producer in the United States and the largest manufacturer and distributor of cement, ready-mix and aggregates.

www.cemexusa.com

Lafarge names new president for River Region

Lafarge North America has named Olivier Merindol president of the River Region for the Cement Division. The River Region is comprised of 15 states in the Midwestern United States.

Merindol joined Lafarge in 1996 at its global technical laboratories in Lyon, France.

He later served at the company's technical center for central Europe in Vienna, Austria. For the past five years, he was senior vice president in charge of Lafarge's Corporate Technical Services Center (CTS) in Montreal, which provides testing services and product research for all of the company's cement operations in the United States and Canada.

John Stull, the departing president of the River Region, has been named senior vice president for marketing and supply chain management for Lafarge's global cement business.

www.lafargenorthamerica.com

Shasta Industries acquires FossilCrete

Shasta Industries announces the acquisition of FossilCrete, the industry leader in vertical concrete stamping systems based in Oklahoma City, Okla. FossilCrete will be operated along with its sister division, Xcel Surfaces, an innovator in the decorative concrete industry. Andy Blake, manufacturing operations officer for Shasta Industries, will oversee the new business segment.



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Business operations and some manufacturing will move to Phoenix, Ariz., with secondary manufacturing and all new product development remaining in Oklahoma City. Former owner of FossilCrete, Stanton Pace, will become director of new product development and continue to provide technical assistance. Shasta Industries plans to expand into niche markets of the decorative concrete industry, marketing nationally and internationally.

FossilCrete was honored with the 2006 Experts' Choice Award: Most Innovative Products in the decorative concrete category at the World of Concrete Show in Las Vegas.

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MAPEI runner wins 2006 Boston Marathon

MAPEI-sponsored marathon runner Rita Jeptoo of Kenya won the Women's Division of the 110th Boston Marathon with a time of 2:28:38. Wearing the trademark MAPEI "cubes" and logo on her running outfit, Jeptoo came in 24th overall in a field of more than 22,000 men and women who entered the marathon. Due to a late arrival, she did not have a chance to review the

course before the race. This was Jeptoo's first American marathon.

www.mapei.com
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Brickform and Ideal Work come together

Brickform and Ideal Work announce the formation of a joint business venture. Ideal Work is a leader in decorative concrete products, tools and supplies in Europe and the Middle East. Both companies will expand their business in the other's territory. The companies will also be developing training systems for their global customers.

www.brickform.com
www.idealwork.it

Blastrac Global completes restructuring

Blastrac Global is pleased to announce the opening of its new Oklahoma City manufacturing facility, which adds to the company's capacity for producing Blastrac and Sawtec equipment to meet increased demand. The new facility also houses the company's SPARC (Surface Preparation Academic Resource Center) training school, which moved into a 10,000-square-foot



room that contains concrete and asphalt slabs for testing products. The school offers in-depth training for end users in the industry.

Blastrac's customer call center recently moved to the new location from Houston. This final move completes a two-year restructuring of the warehouse and support locations into one master distribution and support facility. Since the opening of the facility last month, Blastrac has increased the number of employees and plans to hire more assemblers and welders in the near future.

www.blastrac.com

Crown Polymers markets SpeedCove

Crown Polymers has entered into an agreement to become the exclusive North American distributor of SpeedCove, a precast coving system that provides uniform coving throughout the flooring project while reducing application time. "We can now offer architects and installers the ability to specify and recommend an integrated floor coating and precast coving system that improves the speed, quality and consistency of the overall project," said Floyd Dimmick, technical director and co-founder of Crown Polymers.

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Correction

In the May/June issue of *Concrete Decor*, a copyediting error changed the meaning of a sentence on page 25 in our story on shotcrete. The sentence should read as follows:

"This gives contractors the option to mix, pump and spray material for smaller jobs, and for large jobs to bypass the mixer, instead having the ready mix delivery of shotcrete dispensed directly into the receiving hopper."

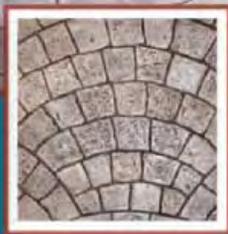
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Italy in Three Days... not if you can help it!

by **Bent Mikkelsen**

Well, if you're into concrete, which I know you are, there's a company in Italy I would like to tell you about. Ideal Work, a new Brickform partner for Europe, is located about an hour's drive northwest of Venice (that's Venezia if you're trying to find the place via road signs), just outside a beautiful town called Castelfranco.

As far as distributors of concrete products go, Ideal Work ranks among the top on *Concrete Decor's* scale. Step through their doors

and you not only experience the heart and soul of the Italian people, but their passion as well. Yes, Italy is well known for its cuisine, its wine, beautiful people, art and music — but rest assured, they also want to gain a reputation for the best in architectural concrete finishes. As an established product manufacturer and distribution center for European contractors, the company today has its sights on developing a wider distribution network in order to meet the growing demand for decorative concrete products throughout the continent.



Maurizio Pontello demonstrates Ideal Work's vertical overlayment system.



Dave Blasdel shares his stamping expertise.

I recently flew to Italy for a two-day training workshop held at Ideal Work, where company owners Luca Seminati and Maurizio Pontello showed me their state-of-the-art facility, including a fully stocked warehouse, exquisite showroom and classrooms equipped for PowerPoint presentations and Q & A sessions.

The workshop kicked off with a traditional indoor stamping seminar led by Clark Branum, technical director for Brickform. On hand to assist was Dave Blasdel, a talented Montana-based contractor. While we were waiting for the concrete to set before stamping, Maurizio gave a fascinating demonstration of the company's vertical overlayment system, called Ideal Wall. The talented Maurizio impressed everyone with his texturing and coloring methods.

When the slab was ready for stamping, Dave moved into action and demonstrated a sequence of stamping techniques. One of his initial challenges was the fact that the forms were not square. To address this challenge, Dave showed how a texture skin could be used to disguise the edge by laying it between the stamp and concrete to keep the grout line from showing up inside the edge of the slab. Following this procedure, the students — from Norway,



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Clark Branum shows off Brickform's new enCounter countertop mix.



Sweden, UK, France, Spain, Albania, Holland, etc. — got involved in stamping the inside field and finishing off with some important detailing.

As the day progressed, Clark began a demonstration of Brickform's latest product offering, enCounter concrete countertop mix. The class not only gained a better understanding of how creative they can be with concrete countertops, but also how different methods would affect finishing techniques, which were presented on day two of the seminar. Clark's combination of technical expertise and practical experience made a powerful statement on the benefits and practicality of properly installed decorative concrete.

Well, how does one get to taste Italian cuisine and fine wine on a whirlwind tour? You accept a dinner invitation from Ideal Work to enjoy an evening with their gracious staff and a group of contractors whose enthusiasm for decorative concrete is now apparent in the farthest corners of Europe. As one course followed another, the warmth of Italy, its people and atmosphere, were fully revealed.

If you're going to spend three days in Italy anytime soon, here's my recommendation, spend four! Then you can tell me how Venezia was. 📱

Stay tuned! Decorative concrete's "superstar" Bob Harris is slated to conduct a training seminar at Ideal Work in September. Visit www.idealwork.it for more information on their upcoming events.

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Floor Seasons

Las Vegas, Nevada



by Mike Dawson

Cary Grant was a laborer, stripping and waxing floors, the first time a boss told him he was going to learn to stain a concrete floor. He wasn't impressed. "Whatever, dude, just pay me my hourly wage."

In his days of floor maintenance, Grant, who describes his socio-economic background as "mutt," lived a less-than-healthy lifestyle. He was young, lacked

ambition, and his limited visions of the future didn't include concrete. He was just a guy at a janitorial service, cleaning floors.

But as Grant grew up, his goals evolved, too. His company, Floor Seasons, is a leader in concrete staining in the Las Vegas area, one of the hottest construction markets in the country. Floor Seasons is committed to staining — and nothing but staining. Grant sticks with staining because he can take

ever-larger creative challenges without getting in over his head. "If I am going to take a risk, it is with something I know," he says. "If I am going to push the envelope, I'm going to do it with staining."

He also appreciates what staining does for the customer as compared to alternatives such as stamping and epoxy coatings — it's less expensive and easy to maintain.



Photos provided by L.M. Scofield Co. and Floor Seasons



The company specializes in multicolor designs on interior and exterior surfaces in homes, restaurants and retail establishments. Floor Seasons employs five people, including Grant's brother, Jon Belger, who has taken the lead on most of the hands-on work while Grant runs the business and manages quality control. Their work features detailed designs with high-definition lines, including flames, tropical birds, rolling dice (this is Vegas, after all) and Grant's signature, ivy.

Many designs, like the ivy, are cut freehand with an angle grinder. Grant uses the Dewalt 4-inch XP Extended Performance wet/dry diamond blade,

which for his money is "the baddest blade on the planet."

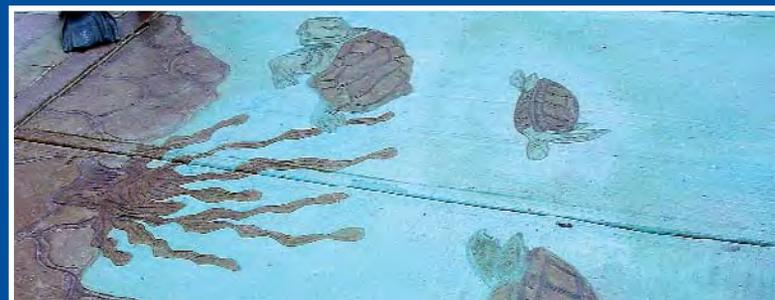
For color, he uses Scofield and Kemiko chemical stains almost exclusively. Plastic board is used to prevent bleed, or in some designs one color is put down and sealed before the next is applied. Customers approve colors before the sealer goes down — it's in the contract.

Grant has found the local Yellow Pages to be the most effective form of marketing. Second is word-of-mouth, which requires keeping a clean record with the local contractors' board and a good reputation with builders and contractors. The company, whose slogan is "Art You Can

Walk On," maintains a Web site (www.floorseasons.com) with photos that help customers understand the nature of acid staining.

Grant also offers instructional DVD's through his Web site. He bought the video production equipment to make his own series because he felt the market needed a comprehensive set of DVD's that show every detail of the job. His series demonstrates a wide range of techniques, covering every step of the process.

The company received some publicity and a real shot of pride when it was selected to showcase its work in the Artistry in Concrete section at the 2005



Photos provided by L.M. Scofield Co. and Floor Seasons

World of Concrete. A starring role at WOC, and right in his hometown, led to some media attention and free advertising. More important to Grant was the honor of being chosen as a demonstrator.

The company is growing with the regional market, having recently nailed a contract involving a 1,000-unit subdivision in Kingman, Ariz., a town about 90 miles from Las Vegas that is fast becoming a commuter town.

This contract should keep the company busy for a couple of years. When purchasing a custom home in the unit, buyers will select one of five design packages for garage floor, walks and patios

— and the same buyers have the option of selecting interior concrete work as well. Grant plans to double the size of his crew this summer and personally train each worker.

This bonanza came together in the company's fifth year. Grant attributes Floor Seasons' success to simple hard work, integrity, creativity, and the product itself. And it really helps to marry well, he adds. His wife, Julie Grant, who thought up the name of the company in the middle of the night in 2001, does the books and gets a lot of the credit for Grant taking his floor-stripping skills to a higher level.

But the janitorial skills were not for nothing. Preparation is a key part of the job, and Grant's years of stripping floors made him an expert at prep. He can also speak like a pro when teaching clients how to maintain their newly stained floors.

Grant said he and his crew enjoy the residential jobs as much or more than the big commercial jobs that receive public attention. "It doesn't have to be a high profile job" to be important, he says. "It could be Joe Schmo who wants his grandchildren's names in his floor — we're stoked for him." 📱

www.floorseasons.com

Reactive staining on vertical concrete surfaces is not that common — yet. But according to Steve Schmid, president of Stone Touch Inc. in Salt Lake City, it's starting to catch on.

Schmid is a vertical stain veteran. He has stained a 22-foot-high, 38,000-square-foot retaining wall for a ritzy residential development in Jackson Hole, Wyo.; an 80,000-square-foot tilt-up office building, also in Jackson Hole; three bridges in Salt Lake City; and a library in St. George, Utah. "In an area like Jackson, painting looks so artificial in such a beautiful setting," he says. "There are quite a few stained vertical surfaces up there."

The more walls he stains, the more requests he gets. "They see a job we've done and they want the same thing," he says. "As people see how it's a viable option and that they don't have to repaint it, it kind of catches on."

Spraying stain onto vertical surfaces can yield remarkable results. Just ask Kemiko Concrete Products president Barbara Sargent. One of the company's signature jobs was completed in 1953 on the walls of Jackson Lake Lodge in Grand Teton National Park. Even today, the building shimmers with "the colors of the Grand Canyon," Sargent says.

Applying reactive stain to a vertical concrete surface is not all that different from staining a floor — concrete is still concrete and stain is still stain. But prior knowledge of a few common problems that crop up when the process is tilted up can help save some anguish later on.



Going Vertical with

by John Strieder

With Reactive Stains

Photo courtesy of Kemiko Concrete Products

One of the company's signature jobs was completed in 1953 on the walls of Jackson Lake Lodge in Grand Teton National Park. Even today, the walls still shimmer with color.

Potential problems

Santa Cruz, Calif., contractor Tom Ralston used extreme measures last winter in New York state when staining 36,000 square feet of wall, 35 feet to 40 feet high. Workers rode lifts to power wash the walls and applied stain with backpack power

sprayers. "We tackled this problem with unique weaponry," Ralston says.

Staining vertically poses a unique set of problems. On a vertical job, some of the slab is well out of reach, which makes achieving consistency more difficult. Getting workers and equipment to the top

of the wall is not easy, and gravity causes the stain to run and streak.

Finally, there's the acid mist. To avoid drips, the stain must be applied as several coats of a light, fine mist. At the top of a high wall, wind will catch the hydrochloric acid fog and distribute it onto everything from windows and sidewalks to the skin of employees. "You can actually develop esophageal problems," Ralston says. "It's 'water in the lungs.' It can be a real problem."

Another issue on the New York job was temperature, particularly as they were working in November. "Acid stain doesn't seem to take as well if the temperature gets down to freezing," Ralston says. "All bets are off."

Schmid of Stone Touch says streaking is the single biggest problem he faces on vertical surfaces. A rolling bead of stain can do serious damage to a high-end finish. "It's really difficult to keep it from running," he says.

However, he has developed a few techniques that keep drips and runs to a minimum. Like Ralston, he applies the spray in a fine mist with a light coat, making several passes. "Using a fine mist like that, the wind can carry it forever," he says. "It's not pleasant. Stuck up on a lift, you can't get away from it. You have to have full protective gear on, head to toe."

It's best to have the staining completed before other parts of the building are put in place, Schmid says. "The stain is going to etch any glass, metal or plastic. It will etch stucco. It will stain caulking."

Conditions such as direct sunlight and rain will also influence how well the job goes, Schmid says. Hot or cold temperatures can alter the reaction time and even change the shade of the stain. "It's not a huge effect, but it's visible enough to notice."

If staining two sides of a building, Schmid does one side in the morning and one in the afternoon to maintain consistency in every variable.

Application techniques

As with any concrete job, staining a vertical surface begins with proper prep work. Sargent of Kemiko says for many walls, a pressure wash to remove weathering will suffice. But Scott Thome, director of product surfaces for L.M. Scofield Co., recommends starting with a

This library building was colored with Kemiko's Cola, English Red and Green Lawn stains.

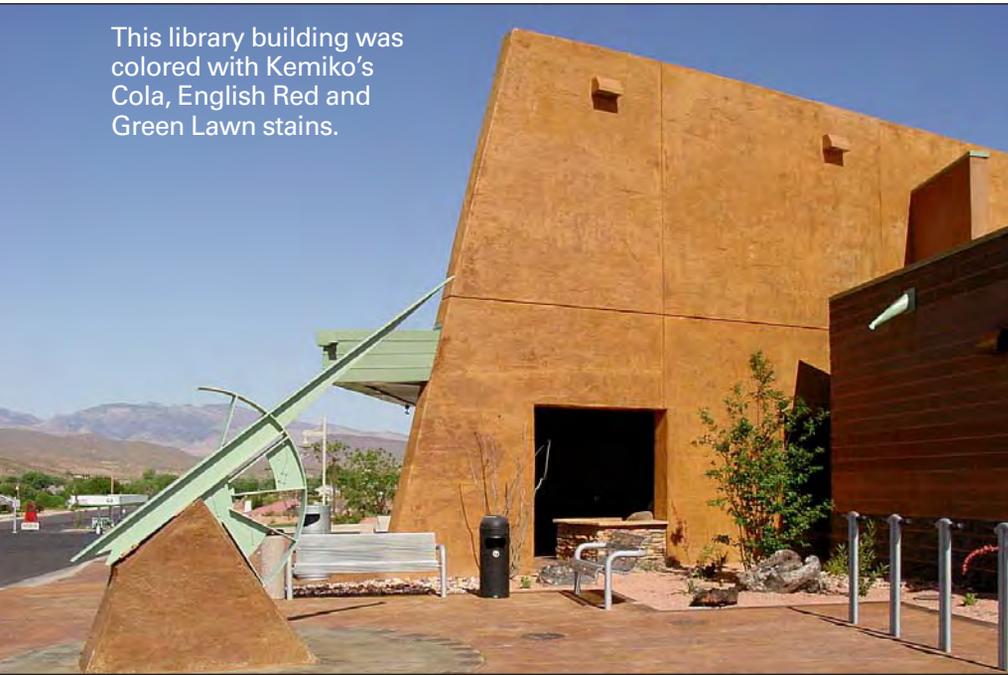


Photo courtesy of Stone Touch Inc. and Kemiko

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mechanical scour, such as sandblasting or scarifying. "For all stain applications, the substrate must be open to absorb the stain and durable enough to accept and hold the sealer for the intended use," he says. "When pressure-washing a concrete substrate you are mainly cleaning the surface and not mechanically opening the pore structure."

Form release agent or tilt-up bondbreaker residue is a concern, which is why Nox-Crete Products Group recommends pretreating the wall with a solution of TSP in water followed by pressure washing. Schmid recommends sandblasting tilt-up walls beforehand to remove excess form-release agent and better protect the surface against runs.

When it comes to application, contractors lean toward spraying, although some may use a sponge or foam brush to achieve a special effect. Kemiko recommends an all-plastic handheld garden sprayer. "Our product is a very mild hydrochloric acid. It's going to react with anything that's metal," Sargent says.

The creative muse might influence the choice between metal and plastic spray equipment, Thome says. "We read that only plastic should be used in sprayers, brooms and other equipment when applying acid-based stains. That is true if you do not want to incorporate metal impurities into your project. But there are contractors that intentionally use a copper wand on a sprayer to obtain a certain look.

"Is this a good application practice? Not really," he adds. "It can be dangerous, and when working with acid-based stains, you need to be aware of safety."

Fix the drips

Manufacturers are also eager to address the run factor. "It is best to practice your application techniques in advance of performing any work for a paying customer," says Michael Linn, president of Nox-Crete Products Group. "Removing run marks is not easily accomplished."

The best way to fix drips when they do occur is to catch them with a brush or something absorbent, such as a C-sponge.

A scrub afterwards reduces surface tension, making a stain more uniform, particularly on a tighter vertical slab, Thome says. Diluting an acid-based stain with water will reduce reactivity, which may also minimize streaking, he says.

To further minimize the run problem,

many contractors start at the bottom. "Dilute the acid-based stain, pre-wet the wall, start the application from the bottom and work your way up," Thome says. "With water borne reactive stain, if you obtain rundown, you are applying the material too heavy."

Nox-Crete recommends applying acid stain with a hand pump sprayer, working from the bottom up with a 3-inch to 5-inch rundown, immediately followed by scrubbing with a brush. "Several light applications generally provide a more uniform appearance with minimal run



Photo courtesy of Stone Touch Inc.

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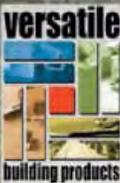
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Photo courtesy of Stone Touch Inc. and Kemiko



This commercial building in Jackson, Wyo., was colored with Kemiko stains.

marks,” Linn says. “Scrubbing the acid stain immediately after application removes acid reaction products from the surface of the concrete, allowing uniform and deeper penetration of the acid stain.”

After application

How big can you go? “There’s no limit to space if you have control of the job, if you have people who help control dripping,” Sargent says.

Joints and angle changes in the structure can be used to break up the space. Nox-Crete recommends applying its acid stain to small, workable areas, Linn says. “For example, start the application at a corner and work to a feature strip, rustication strip or expansion joint wherever possible, to minimize color or shade differences.”

The next step is letting the stain dry. If the job is outdoors, heat and sunlight will affect how the stain reacts with the concrete, so whenever possible, work in the shade.

“On any stain project with a product that produces a chemical reaction, you do not want the product to dry out extremely fast,” Thome says. “Keeping sunlight to a minimum will minimize premature drying of the material. Also, wind will cause the stain to dry before the full chemical reaction can take place. For acid-based stains I would recommend predampening the surface with cold water prior to application. This will not only cool the wall but also help minimize streaking.”

When it comes to sealing a stained wall, most sealers will work fine — as long as the customer has approved the final look with a mock-up, Thome says. “There is a zoo that is using a potassium silicate over an acid-based stain to develop a higher abrasion resistance surface on their rockscapes. The appearance is what they are looking for, and it is lasting longer than a typical sealer.”

There are a few sealers that actually diffuse ultraviolet light to protect the color

from fading, Thome says. “These are very high-performance acrylic-modified urethanes, so the price will be higher, but the performance is better than many of the other options.”

When a stain job is intended to complement an outdoor setting, flat and matte sealers are better fits than glossy sealers, which can look shiny and fake. “The high gloss look in many markets is the thing of the past,” Thome says.

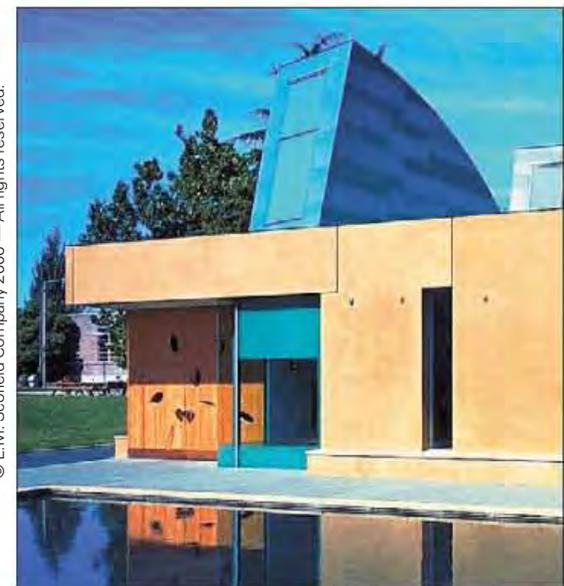
But the appeal of matte finishes is partly geographical, he says. Gloss is still popular in big cities such as Philadelphia, New York City and Chicago. “Shine to some people means expensive. It comes down to, do you want it to look rich or do you want it to look like a natural piece of stone?”

To seal vertical acid-stained concrete surfaces with the wet look, use two coats of either a water-based or solvent-based clear acrylic sealer, Linn says. “The acrylic sealer



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This building and overpass were both colored with L.M. Scofield’s Chemstain.





Photos courtesy of Stone Touch Inc.



gives acid-stained concrete the 'wet look' and brings out all the shades of color."

On Schmid's tilt-up office building job, he used glossy solvent-based acrylic on the bottom half of the walls and silicone-based natural look sealer on the top. The glossy sealer gave the walls more protection near the ground, he says. On the other hand, he did not seal the huge retaining wall project at all. "Stain itself really doesn't need anything to protect it," he says. "But some people feel better if it's sealed."

There is one more factor, possibly the thorniest when it comes to acid stains: cleanup.

The acid must be neutralized. Nox-Crete recommends neutralizing the acid residue with a solution of sodium bicarbonate and water. But there's more: The heavy metals in many acid stains are also contaminants.

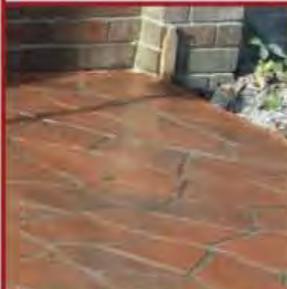
"The heavy metals that actually produce the color are what should be the real concern," Thome says. "If these metals get into the groundwater they will contaminate the water system. They are much more hazardous than the acid in the stain. All of the residue that is to be removed after the application of the stain must be captured, treated and disposed of according to local regulations."

Waterborne reactive stains don't leave behind any residue to be removed, he notes. "Once waterborne reactive stains have been applied to a concrete substrate they will remain there, and no washing is necessary. This reduces the contractor's liability on the project."



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Photos courtesy of Concrete Surfacing Systems

Rich Redwood Shades Bring Health Village to Life

by John Strieder

The Potawot Health Village in Arcata, Calif., greets patients with the look of a traditional Native American village, right down to the thick redwood planks that form the walls of the buildings.

Visitors might be even more impressed once they take a closer look at the redwood planks of Potawot. They aren't wood at all — they're tilt-up concrete.

Sacramento contractor Concrete Surfacing Systems Inc. used reactive stains to duplicate redwood's rich shades for the 12 buildings in the complex. "It looks exactly like wood," says company president Rod Scott. "We actually had guys call us up saying they had walked up to a building and they could swear they could pound a nail into it."

Scott and his crew photographed a preserved Indian village on state park land in Trinidad, Calif., to study the colors and textures of the historic buildings. "The huts were built out of redwood and carved with deer antlers," Scott says. "Every plank was different."

In many cases, Scott's team simply duplicated the patterns of the wood, plank by plank, on the tilt-up structures. The colors of cut redwood, along with painted-on knotholes and other features, were recreated with an array of L.M. Scofield's stains and dyes, supplied by Spec-West in Sacramento.

Workers started by spraying a base coat of Antique Amber onto each wall, then applying several additional colors, including Faded Terracotta, Padre Brown, Black, and Fern Green. To apply these colors raggedly, in a way that would mimic the way they appear in wood, Scott and his crew developed their own





handmade applicators. The team bought a slew of standard-issue window scrubbers from a home improvement chain store, then used razor blades and torches to cut and singe the soft end of the applicators to make them uneven. "We'd tear them up so they wouldn't be the same as each other," Scott says. "When all of them were used on a wall, they hit different spots every time."

The stainers tried to make each wall look like a unique set of panels. Muse Concrete Contractors Inc. of Redding, Calif., did its part to create the illusion by developing tilt-up wall forms that replicated the rough, uneven sides of the old huts.

Scott's crew stained 100,000 square feet of wall in a couple of winter months. It was foggy every day, Scott says, which was a problem, as moisture interferes with acid stain. "Some days we couldn't work," he says.

They also ran into a small snag when the stain didn't take at spots on some of the panels. Power-washing the bald spots with TSP helped a second try stick. "We think all the release agent hadn't gone away," Scott says.

Wind was also a factor, especially since the crew wanted to keep acid-stain overspray off the metal roofs of the buildings. And just as the job was wrapping up, rain delayed application of the sealer for weeks. "Some sealer we had originally put down turned white," he says. "We used dyes to fix it."

The 42,000-square-foot facility, which included the 12 buildings arranged in a circle, was built by United Indian Health

Services. UIHS opened the complex in 2001 to serve nine tribes and more than 13,000 Native Americans.

Concrete Surfacing Systems worked side by side with a tribal council to make sure the project went according to plan. The council kept a close watch, meeting with Scott every Friday, suggesting color touch-ups on individual walls and stringently monitoring disposal of stain runoff. The complex was built on tribal wetlands, and any ground contamination was unacceptable. "One thing they said was, 'For sure we're going to test,'" Scott remembers.

In fact, what Scott says he treasures the most from the experience was his clients' appreciation. "We got a letter from the Indian council saying they were glad they picked us as contractors," he says. "They had to all like it. That was hard. But the buildings look so much like huts, they couldn't say anything. It was perfect."

Scott also credits Arcata-based Mayan Construction, the project's general contractor, with making his job easier. "He got everybody out of our way," he says. "He knew what we were doing was very artistic. A job like this couldn't have been done without total cooperation."



Reinforcement: *The anti-stress solution for concrete countertops*

by Susan Brimo-Cox

Concrete countertops are works of art. They are also structural pieces of concrete. Just as you don't have to be a trained artist to create an aesthetically pleasing concrete countertop, you don't have to be an engineer to build one that is structurally sound — but it helps to understand the physical stresses at play.

“Reinforcement is one of the most misunderstood topics in concrete countertops,” observes Jeffrey Girard, a civil engineer and president of The Concrete Countertop Institute.

Too little, too much — how much is just right? Unfortunately, there is not a simple rule of thumb when it comes to reinforcement. Each concrete countertop has its own criteria: span, width, thickness, load and the material properties of the concrete itself. What is critical to understand, Girard says, is that “concrete countertops are beams, not slabs on grade.” He maintains that if you understand where load, compression and tension occur in concrete countertops you can figure out the appropriate reinforcement design.

Types of reinforcement

It's probably a good idea to point out at the start that there are two kinds of reinforcement: primary and secondary. Primary reinforcement you can't do without. Secondary reinforcements can contribute additional characteristics that may make a better product, but are not absolutely necessary.

Primary reinforcement materials are structural, plain and simple. Rebar, ladder wire and structural carbon fiber grid are all primary reinforcement materials and each has different characteristics and uses.

Conventional rebar is indeed a strong reinforcement material, but for many concrete countertop applications it's just too big. “Conventional 3/8-inch, 1/2-inch or 3/4-inch rebar is way too big for a typical 1 1/2-inch thick concrete countertop,” Girard explains. “No material more than 3/16-inch in diameter should be used in a countertop less than 3 inches thick.”

Michael Karmody, a founding partner of Stone Soup Concrete, agrees that rebar is only useful in a situation where you have a large volume of concrete. “We typically pour 1 1/2 inches. Rebar takes up too much space and can cause cracks.”

The profile of the rebar or steel used may also be important. Tom Ralston, president and CEO of Tom Ralston Concrete, observes that smooth bars don't grab to the concrete as well as ribbed bar.

Ladder wire and wire mesh are used by many concrete countertop contractors, and for good reason: Both materials are strong and small enough to use effectively in countertops. The major differences are the overall shape and gauge. Ladder wire is 9-gauge structural wire that is a narrow parallel set of strands. Wire mesh is large, open mesh, often 10-gauge in diameter, but there are heavier gauges, such as 6-gauge, which is a larger diameter.

Mesh with enough steel in it to provide the required tensile capacity is a very efficient way of reinforcing large, simple slabs (such as rectangles), Girard says. On the other hand, he points out, ladder wire is very efficient for reinforcing complex shapes and around sink holes, where the fixed spacing of welded wire mesh would require extensive cutting and splicing. “Both can work together to make very effective, efficient and economical reinforcing,” he says.

Ralston likes flat wire mesh because it is easier to work with. “You cut the shape you need and it can be used throughout a monolithic unit,” he says. He has found that it is better to use 2.1 gauge for more substantial reinforcing. “Also, you can address the corners and thinner areas with small, 1/4-inch stainless bar that has been grooved with a grinder for better bonding,” he adds.

Structural carbon fiber is relatively new to the concrete countertop trade. John Carson, director of commercial development for TechFab LLC, explains that carbon fiber was originally developed for the precast industry and used to produce CarbonCast precast commercial building systems. But use of carbon fiber has migrated to concrete countertops because it has high tensile strength and is thin enough to fit in tight spots.

Some countertop contractors use other reinforcement materials, such as expanded metal, and report good results. Some experts, however, express concern related to the variable properties of some

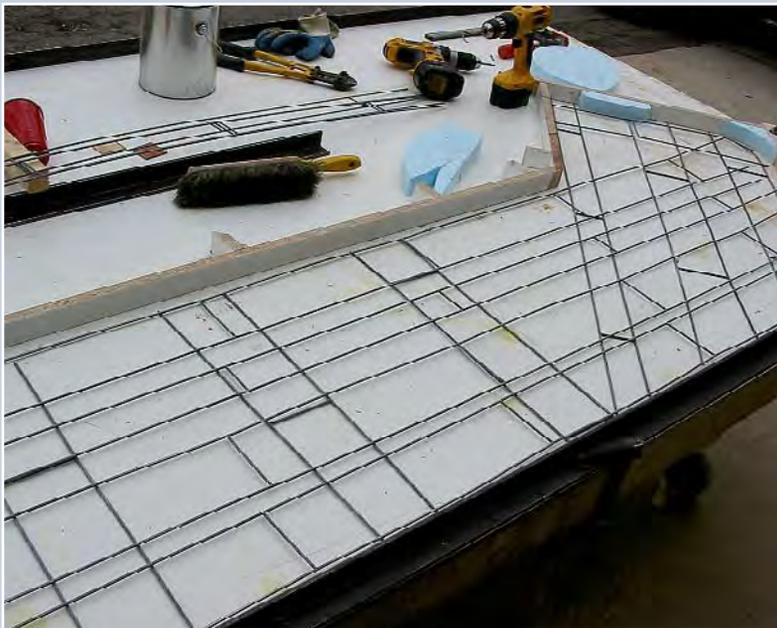


Photo courtesy of Concrete Countertop Institute



Photo courtesy of Tom Ralston Concrete

of these materials, especially when they are used for primary reinforcement.

Fibers are frequently used in concrete countertop mix design, but reinforcing fibers should only be used as secondary reinforcement. Most fibers are synthetic — polypropylene or nylon — and so they are physically unable to provide significant tensile reinforcement. What a matrix of fibers in the mix can do is to help stabilize the wet concrete as it cures. The fibers help by distributing shrinkage stresses, thereby minimizing or eliminating large cracks.

But Ralston cautions that fibers can be problematic if they clump and are not mixed or dispersed well.

Some fibers are structural, such as hooked steel fibers, chopped carbon fibers, polyvinyl alcohol and chopped alkali-resistant glass fibers. While these individual fibers are strong, and they improve the mechanical properties and tensile strength of concrete, Girard cautions they are not a replacement for reinforcing steel.

Placing reinforcement

Where you need to place reinforcement depends on your countertop. In Girard's view, because countertops are beams, they should all have the reinforcement placed in the bottom. "There should be between 1/4 inch and no more than 3/8 inch of concrete between the bottom of the countertop and the reinforcement. And there should be at least 1/2 inch of concrete between the reinforcement and any edge," he explains.

Ralston has a different take. He believes that the plastic shrinkage cracking begins at the top of the slab, thus the reinforcing should be



Photo courtesy of Concrete Countertop Institute

closer to the top to hold together any cracking right from the onset.

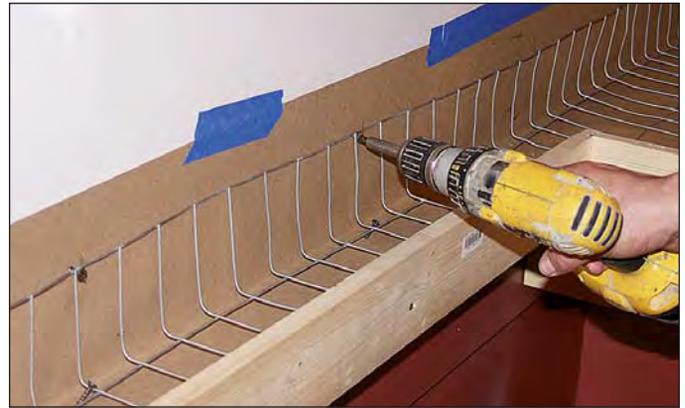
What if your countertop is also acting as a cantilever? You will definitely need reinforcement at the top. Girard recommends placing the top reinforcement between 1/4 inch and 3/8 inch from the finished top. The recommendation remains the same even if you will be grinding the top. "Usually exposed aggregate countertops are ground down a maximum of 1/8 inch to expose the aggregate, so the reinforcing would start out 3/8 inch from the top and end up

1/4 inch from the top after grinding is complete," Girard explains.

Because it is relatively flat and strong, Karmody likes to use wire mesh in both bottom and top placements.

When he knows where a cantilevered section will go, Buddy Rhodes, of Buddy Rhodes Studio, uses a two-layer approach to beef up the countertop. "The two-layer approach is to put steel reinforcing (ladder wire) near the bottom of the slab to counteract the flexural forces at the bottom of the countertop and carbon fiber grid at the top to counteract the flexural forces produced when the cantilever section has weight on it. All this is done in the same pour." He explains that for a right-side-up mold, you pour about a third of the thickness of the slab and place the ladder wire, then pour another third and place the grid, then top off the last third and strike off, then trowel smooth. He says, conversely, an upside-down mold would have the grid first and the steel reinforcing in the top (bottom) of the slab.

Ralston, who casts-in-place most of the time, uses another technique: "If we have large cantilevers extending beyond the



Galvanized wire used for reinforcement in a backsplash.

countertop cabinet more than 10 inches, we use small pieces of L bar to connect the countertop and then fasten wire and rebar to that." If the countertop extends beyond 12 inches, Ralston sometimes recommends the use of corbels.

One could argue that cast-in-place countertops are not beams because there is plywood supporting them. However, if you think about it, even in construction, plywood isn't a structural component; it is flexible. Also, one could point out that cast-in-place countertops are not moved about like precast countertops. Girard emphasizes that the same engineering principles apply to cast-in-place, but he concedes reinforcement may not be as critical — shrinkage control and mix design become the dominant issues.

Dave Pettigrew, owner of Diamond D Co., casts countertops in place; he stresses the importance of good mix design, including the

use of angular rock instead of pea gravel. "Angular rock interlocks and provides strength," he says. Still, Pettigrew uses a variety of reinforcement materials in his countertops.

How does reinforcement affect the final appearance? Well, it shouldn't.

Some contractors are worried about rust forming if the reinforcement isn't galvanized or epoxy coated. Karmody says he actually doesn't mind a little rust because it helps the concrete and steel create a better bond.

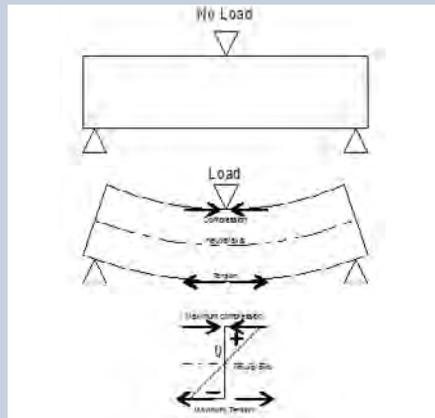
What about ghosting? This phenomenon is frequently attributed to having the reinforcement too close to the surface. Actually, reports Girard, ghosting (or shadowing) occurs when the reinforcement is pushed down into the concrete or the concrete is poured through the reinforcement. "This pushes the aggregate (or larger sand grains)

Countertops as beams: Where the stresses occur

A beam is a horizontal structural member that spans some open space and is supported near the ends. The beam can then support some weight placed on top of it somewhere between the end supports. A floor joist is a beam. Concrete countertops are also beams.

When a beam has weight placed on top of it, that weight causes the beam to deflect (bend). Small weights on stiff beams cause almost no deflection, while large weights on flexible beams cause significant deflection. The deflection in the beam causes two things to happen: The top surface of the beam is compressed and tries to get shorter, and the bottom surface is in tension and tries to get longer.

Between the two, something important occurs. Compression is the opposite of tension, so as one progresses down the beam from the top surface to the bottom, the compression stress gradually decreases to zero and then the stresses reverse, go into tension and gradually increase towards the bottom of the beam.



If an unreinforced beam has a symmetrical cross-section (like a rectangle), the stress switch occurs at the midpoint between the upper and lower faces. This is important because, given that there is no tension or compression stress at the midpoint of a countertop, placing reinforcing steel there does absolutely no good. The point at which this switch occurs is called the neutral axis, and can be thought of as an imaginary line that runs parallel to the length of the beam.

If a countertop is made out of concrete (with no reinforcement), any significant weight placed on top of it will cause it to fail at the bottom of the countertop because the tension stresses in the bottom of the countertop will exceed the tensile strength of the concrete. A crack will form at the bottom and progress upward literally at the speed of sound.

Some argue that because concrete countertops usually actually span only the width of a cabinet box (usually a maximum of 36"), they are rather short beams, and therefore the stresses involved are not that high. This is true, but what about when an 8-foot long precast slab is picked up in the shop and loaded onto a truck for transportation? The largest stresses and biggest risk of cracking occur in the shop. Once the slabs are installed, only settling of the cabinets or building would impart much stress

(Reprinted, with the permission of The Concrete Countertop Institute, from the textbook for Precast Concrete Countertops 101.)



C-Grid is used around a sink hole.

aside and forms a trench that fills in with the finer particles of the cement paste. The result is that the physical composition of the concrete above the reinforcing is different than the rest of the concrete.” Because those lines of concrete are different in composition, they will cure differently and take stain differently.

And what about surface fuzz if you use fiber reinforcement? Different contractors have different solutions to this pesky problem.

Pettigrew sands off any fiber fuzz and applies two clear finish coats, or he'll use a microtopping over a concrete blank that contains the fiber reinforcement.

Karmody says if he grinds the surface of the countertop he'll sometimes pour a veneer layer on top.

Rhodes points out, “We use fibers in the back of the slab so they don't poke out of the finished surface and give you a hairy

countertop. These hairs can be sanded or burned off, but it's better to avoid the peach fuzz.”

When it comes to concrete countertops and reinforcement, Carson observes, “There's skill in creating concrete countertops and you have to understand some of the design implications. There's a wide array of technologies that people use...but reinforcement is important.”

Also important, says Ralston, are experience and analysis of the project.

In the end, it all boils down to the right mix of reinforcement: not too little, not too much. 🛠️



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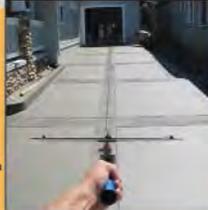
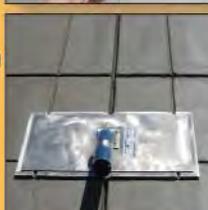





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Perfecting Pool

by Amy Johnson

One of the most popular applications for architectural concrete is the pool deck. Decks have been constructed with concrete for as long as there have been modern swimming pools, and we all remember the hot, scratchy surfaces of our childhood. But new decorative finishing techniques make pool decks comfortable, durable, safe and — most noticeably — beautiful. “The pool deck is the largest thing that people will see in the context of pool and deck,” says Tom Ralston of Tom Ralston Concrete, Santa Cruz, Calif. “Done right it can be all the more enhancing; done poorly and it can make a nice feature turn to extreme ‘blah.’”



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Photo courtesy of Tom Ralston Concrete

Decks





Much more than a patio

Pool decks may look like patios, but because they must perform differently there are some differences in how they are installed and finished. “Good quality concrete practices, slope, climate and safety should be the main factors considered when designing and installing a pool deck,” says Scott Thome, director of product services for L.M. Scofield Co.

Perhaps the most significant of these is slope, required for proper drainage. Typical patios “fall” 1/8 inch every foot to allow for water run-off and to prevent ponding. The recommended slope for pool decks is 1/4 inch per foot. This accommodates the extra volume of water and keeps leaves and debris from washing into the pool. “Anytime you’re moving water to a designated point, length of run, amount of water and surface texture should all be considered,” Thome explains. “If designed correctly, water should move freely to the designated area no matter which textured pattern is chosen. Of course, less texture develops less friction, and water will move with less slope.”

Ralston agrees that greater slope will drain water more effectively, but says, “We feel 1/4 inch is too much fall and when setting patio furniture it is a little more

noticeable and not as comfortable. There is always a light bit of water here and there, and we let the clients know that. Ultimately, it is the client who will make the decision.”

Chris McMahon, president and CEO of Architectural Concrete Design in Levittown, Pa., warns contractors to pay attention to cut and fill situations. “A pool is level, and if a yard is pitched you have to cut into the bank on one side and fill the other side,” he says. “On the fill side you have to worry about the deck settling away from the pool.” A good pool builder will compact the soil properly when the pool is put in. If not, McMahon recommends installing piers: drilling down to virgin ground every four or five feet, filling the columns with concrete and pouring the slab on top of them so that the deck won’t settle.

Choice of color for a pool deck goes beyond mere aesthetics. Color affects how much heat the deck retains, so it is important for comfort too. “Dark colored pool decks are going to be hot,” McMahon says, “so you want to use as light a color as possible. Also, chlorine can leave a white residue on the deck and this is less visible on a light-colored concrete.”

Light colors feel cooler because they reflect more light and absorb less heat. Thome goes further, saying, “Light reflection is not only dictated by color but

the type and color of pigment used to produce that color. For example, a bright red might be cooler to the touch than a light gray. The gray is produced with black pigment and that is what absorbs light. Scofield has conducted several tests relating to light and heat absorption. The difference between a white and a charcoal surface can be as much as 40 degrees F.”

While a lighter — and cooler — color may be important in the South, it can be a different story in the North, where darker-colored concrete can act as a heat sink and retain its warmth on a cooler day.

Lucas Wennersten, vice president of marketing for Progressive Concrete Works in Phoenix, Ariz., points out that differences between pool decks and patios or driveways can impact costs. For example, he says, “Pools and decks with multiple elevations and steps take extra time to form and finish.” Location of the pool impacts cost as well. Wennersten says ease of access with a tractor or ready-mix truck keeps the cost down. “When you’re doing a big pool deck and have to wheel in six or seven yards of concrete, it takes a lot of man-hours.” Extra form work and hand finishing around copings or cantilevered edges can add to the cost as well.

There is general agreement that pools and pool decks require the same standard of base preparation as other concrete applications. “Quality concrete placement is no different for a pool deck than a driveway,” Thome says. “Both need a sound, granular, uniform base for the concrete to be placed on.”

McMahon points out that different parts of the country have different requirements. “The American Concrete Institute (ACI) says a gravel base is not necessary. You just need a stable base. In Georgia they pour on clay. In the North we use gravel as a thermal stabilizer — it is an insulator on expansive soil. You can pour right on stable sand too.” Ralston says in his part of California they prepare the pool deck the same way as a patio, with a 4-inch to 6-inch mechanically compacted rock base. He adds, “When there are soils engineers involved, especially in the fault areas of California, sometimes we excavate as much as 3 feet of soil and recompact the sub-base in 6-inch lifts with Class II Baserock. This is not the norm, but it does occur and the costs can be as much as \$6 per square foot if access is difficult.”



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Photo courtesy of Architectural Concrete Design



Photo courtesy of Tom Ralston Concrete

Fabulous finishing

As the trend toward backyard “resorts” continues, imprinted concrete is a popular choice for pool decks. This gives a more natural “outdoorsy” look than plain, flat concrete. In addition, Wennersten points out, “A stamped texture makes voids for air underfoot so the concrete doesn’t feel so hot.”

Wennersten, whose company, Progressive Concrete Works, represents Bomanite, says that 75 percent of the pools his company installs use the three or four most popular stamps — Ashlar slate (about 50 percent), random slate, canyon stone and a sandstone or flagstone pattern. He recommends that if the pool has 90-degree angles, a stamp pattern with 90-degree

angles should be used and run parallel to the pool. If the pool is round or has lots of radii, he recommends a random stone pattern. Another technique for a large deck is to use an embossing skin and a saw-cut grid pattern, separating the deck into smaller areas and incorporating control joints.

Scofield’s Thome says that most contractors will use embossing skins if they have a say in the choice of pattern. “They drain better because the impression is shallower,” he says. “They are easier to use, which correlates to fewer application problems for the contractor. Personally, I would stay away from deep grout joints in a pattern. They trap dirt and are more difficult to keep clean. I also feel they can

cause more of a trip hazard than a slip hazard. My 4-year-old daughter has fairly small toes. They could easily get caught in a deep joint and cause her to fall.”

Chris McMahon points out that if an embossing skin is used, “You’ve got to saw cut it or else explain that the deck will crack. We actually sell a lot of ‘cracked earth’ pattern decks if the customer is comfortable with a certain level of cracking.” Thome says, “Joint placement is critical in the control of cracking. Control joints should be cut 25 percent of the thickness of the slab and all joints must be sealed with a joint sealant that is capable of withstanding 3 parts per million of chlorine in a pool deck application.”



The Stegmeier Corporation of Arlington, Texas, makes a plastic joint for creating control joints. It is cut to length and pressed into the wet concrete. Then the tape on top of the joint is peeled off to expose a clean surface. These plastic joints have a water seal to keep out non-compactable solids like sand.

Slip resistance

Slip resistance is an important consideration when choosing a texture. “Don’t use a tight trowel finish on a pool deck,” McMahon says. “A typical broom finish is rough enough to prevent slippage.” Wennersten sometimes uses exposed aggregate with rounded natural stone. He also recommends a shark grip additive — fine aggregates added to the sealer for a rougher finish. Progressive Concrete Works is just introducing Actacrete, a finishing process that can be used to bring out fine aggregates, resulting in a sandy texture and color. “One of our most popular applications for this right now is to simulate



Photos courtesy of Tom Ralston Concrete

a beach. It ties in really well with the surrounding landscape,” Wennersten says.

Ralston says, “The two textures we promote for anti-slip are a Tom Ralston Victorian Swirl, where we create raised swirls with a circular motion of a flat trowel during the last pass on the deck, or a sand finish. Sometimes a light sandblast finish is chosen, but this adds approximately \$3 per square foot.”

Thome explains that both texture and sealer impact slip resistance. “Most imprinted, sandblasted, float-finished, broom-finished surfaces are fine if applied

correctly. It does not take much texture to develop enough resistance to minimize slipping. The real key is to retain that texture and not fill it in with the sealer. This is where the acrylic-modified urethanes really perform. The dry film thickness is much less than a typical acrylic and will not fill the texture. High-solids sealers have a tendency to fill minor surface changes. These areas can become very smooth. When water covers these smooth areas your foot can hydroplane. If you chose a sealer that ends up 3-5 mils thick in a dry state, most textures will be retained.”



To make concrete less slippery, Ralston broadcasts a light mesh sand (100 grit or smaller) on the surface when applying sealer. “Another material that is effective and enhances the look of the deck is finely crushed glass,” he says. “We prefer yellow glass because it has a subtle look, although when the sun shines on the glass there is a very beautiful sparkle that emanates from the deck.” McMahon warns that sand must

be incorporated into the sealer every time the deck is resealed in order to maintain slip resistance.

Copings and cantilevers

The deck’s edge, where the concrete meets the water, is a great opportunity for adding visual interest. “The coping is a nice feature to play colors and textures on,” Ralston says. “It basically picture-frames the

pool, so colors are important. Also, you can use the coping and texture to match adjacent bands, steps and caps on, for example, surrounding seat walls. The coping then relates to many features in the pool deck hardscape and neatly ties it all together.”

The terms “coping” and “cantilever” are both used to refer to the deck edge, but technically they are two different things. A

Photos courtesy of Tom Ralston Concrete





coping is a narrow border, usually 12-18 inches wide, around the pool. It typically has a rounded or bull-nosed edge. It is poured separately from the rest of the deck and is attached to the pool.

A cantilevered deck sits on top of the edge of the pool. It can be made of concrete panels as large as 8 feet square and is actually part of the deck. The edge can be rounded or fall vertically.

In both cases, accommodating movement — expansion and contraction —

is the biggest technical challenge. Bud Stegmeier, Western manager and partner in charge of marketing for Stegmeier Corp., explains. “The coping is attached to the pool; it’s part of the pool. So you have a vertical expansion joint at the end.” The coping is separated from the rest of the deck pour by rolling out a length of polyethylene foam flush to the coping and pouring to the foam. “This is a true expansion joint. It absorbs movement,” says Stegmeier. In

short, the coping moves independently of the deck.

Cantilevered decks are a monolithic pour. They experience greater temperature extremes and expand and contract at a greater rate than the pool itself. A bond breaker must be used between the deck and pool or else the movement of the deck would crack the tiles of the pool. Essentially, a horizontal expansion joint is created by inserting a bond-breaker material such as tarpaper between the pool and the deck to prevent the concrete top from adhering to the pool.

One big difference between patios and pool decks is finishing the edges. It used to be that fairly complex forms were required to create a rounded edge. In fact, copings were often precast instead of poured in place to avoid this extra form work. Today, though, there are disposable foam forms for creating attractive, uniform edges. Stegmeier Corp. makes these forms of extruded polystyrene in 8-foot sections. To use, the pool is poured and the tile set to its highest point and leveled. A backer is peeled off the form to expose a tape adhesive and the form is adhered to the tile. The foam is flexible enough to turn around corners and curves.

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Then the concrete is poured into the form. Because the foam is porous, it is breathable and the form can be stripped quickly without creating damaging suction, so the pool edge can be finished at the same time as the rest of the deck.

One last detail: drains

One final difference between most patios and pool decks is the requirement for drains. Stegmeier says most pool decks do not use round shower-type drains because the surface must “fall” down to the drain all 360 degrees around. Instead, Stegmeier

recommends drains of continuous extruded PVC. These can be set in the center of a deck or put against a wall. Either way results in a flat deck. The amount of fall in this deck drain is the height of the drain. The drain is set on subsoil so it is uniformly level. The ends are open and drain into the yard sloped away from the pool or, with the use of adapters, into a drainage system. The newest drain from Stegmeier, the Frontier Deck Drain, has a flexible top that is held in place by tension so there are no screws to come loose. It is easily removable for cleaning.

Once you’ve got the details of your pool deck worked out, there are a few things you need to remember. First, don’t rush. Attention to detail and careful workmanship will pay off in customer satisfaction. Second, make sure the customer understands both the possibilities and limitations of concrete. Create a mock-up and have all parties sign off on it. Managing customer expectations will allow you to create a beautiful, functional pool setting, whether in a private backyard or a city park. 📱

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Control

by Stacey Enesey Klemenc

All they're cracked up to be

If you pour it, it will crack.

This unwritten law of concrete may as well be written in stone because — try as you might — there's no getting around it. So what's a contractor to do? In short, learn to master the art of placing control joints to encourage concrete to crack where you want it to crack.

According to the Portland Cement Association, control joints — also called contraction joints — should be placed at two times the slab thickness in feet for a maximum aggregate size of less than 3/4 inch.

For example, the PCA maintains, the maximum joint spacing for a 5-inch slab with a 3/4-inch coarse aggregate would be 10 feet. If the maximum coarse aggregate size is greater than 3/4 inch, the spacing could be increased to two-and-a-half times the thickness. This would increase the spacing to 13 feet.

Lee Levig, owner of Concrete Works in the San Francisco area, cites what he says is the American Concrete Institute's "rule of three." If you have a four-inch slab, he explains, you would multiply it by three. "So every 12 feet, you would have to cut a control joint," he says. In his area however, he adds, he uses the "rule of two," where his crews cut a joint every 8 feet for a 4-inch slab. "We're in a real clay soil area, where soil expands 8 percent volume from dry to wet."

How low should you go

After determining how far apart you should place the control joints, how deep should you cut them? Well, that all depends on whom you ask.

Levig says the rule of thumb is 25 percent the depth of the slab. "So if it's a 4-inch slab, you'd cut a 1-inch joint."

Dustin Ferch, owner of Dustin Ferch Concrete Construction in Roseburg, Ore., agrees with Levig for the most part. But in his neck of the woods, where the soil is bad and they have a lot of issues with cracking, he says, "I cut 50 percent on rebar. The aggregate will hold the slab in place, but we have to rely on rebar and lots of control joints."

Charyl Dommel, president of Slip Industries, the company that manufactures the Torpedo Groover, thinks joints should go at least a third of the depth of the slab. "A nice deep groove isn't going to hurt the concrete," she says. Her company makes a 1 3/4 -inch, as well as a 1 3/8-inch groover, which she says will accomplish most jobs nicely.

Chris Sullivan, national sales manager for QC Construction Products in Denver, believes in making cuts a bit deeper than most. He maintains they should be two-thirds the depth of the slab.

Cutting the joints

According to Sullivan, there are three methods to cut in control joints. You can hand-cut a joint with a groover while the concrete is still wet. You can use an early-entry saw to cut a joint as soon as the concrete is hard enough to walk on. Or you can use a standard saw to cut in joints 24 to 72 hours after the concrete is poured.

"With early-entry saw cutting, you're out of there before the concrete has any cure on it," Sullivan says, adding that Soff-Cut is the leader in the industry for making these tools. "You're able to put a joint in there before the stress begins. Early-entry saw cuts eliminate random cracking dramatically."

Jooints



The Kennedy Space Center.

Photo courtesy of Portland Cement Association



Chris Sullivan with QC Construction Products offers this bit of advice when it comes to staining and saw cuts: "I highly recommend dry cutting instead of wet cutting if you plan to stain the concrete," he says. "The wet dust can turn into a paste and embed itself in on either side of the cut. When you stain, you'll get a different color on either side."



Photo courtesy of Portland Cement Association

The Kennedy Space Center.

The downside to this method, he concedes, is that only certain types of equipment can be used and early-entry saws are expensive compared to other types of concrete saws.

But not all Soff-Cut saws are expensive, says Brenda Nabarrete, marketing manager for Soff-Cut in Corona, Calif. Five years ago, Soff-Cut introduced an economical line called Prowler saws. "These saws allow contractors who could not previously afford to Soff-Cut their joints to get into the game at less than half the cost of traditional Soff-Cut saws," she says.

The early-entry sawing not only eliminates the need to come back the next day, but allows the cutting to be done dry. "It's cleaner and it's healthier," Nabarrete points out. "There's no slurry running off and very little clean-up involved afterward."

The early-entry method also uses a shallower cut, resulting in improved aggregate interlock.

The Soff-Cut system's technology was developed by a California concrete contractor back in the 1980s. He designed the cutting edge of the blades to move upward during operation, Nabarrete explains, pushing debris out of the joint. There's also a skid plate through which the blade is inserted, which many consider to be the key element to prevent edge raveling. "The skid plate holds everything in place while the operator makes a 'surgical' cut," she says, likening the saw to a knife.

"If you come back to cut the next day, cracks are already forming," Nabarrete says. "You may not be able to see them, but they're there."



Photo courtesy of Soff-Cut

Soff-Cut Model 310 in action.

Most contractors contend that cutting with an early-entry saw is no more difficult than using a conventional saw. But some report that the quality of the cut isn't always as good as a wet cut, especially if the blade is worn or the skid plate isn't flat against the surface.

Getting in the groove

Another tool that's very handy to have when it comes to cutting control joints is the Torpedo Groover from Slip Industries. Designed for finishers who wanted a handled tool they could push across the slab (so they didn't have to don kneeboards and crawl), the groover comes in four lengths: 24, 36, 48 and 56 inches.

If jointers have difficulty cutting a straight path, this tool is designed to give them a straight path to follow, says Ferch. "The Torpedo Groover makes a beginner cut joints like a pro. You have to really try for it not to go perfectly straight. You almost can't make a mistake."

Ever since he began using the Torpedo Groover, he says, he spends more time on other details of the job rather than on his hands and knees fixing joints. All of his subs who have seen the groover in action, he adds, have bought one for themselves. "Where it won't eliminate any tools, you'll find your quality control will be much better and the amount of manpower and time will be shaved down."

However, Ferch says, "The groover is super at control joints, but it's not a finishing tool." For that job, Slip Industries has a stainless-steel tool, also guided by a handle, which can be used after the groover to produce a rounded joint. Tools made by other companies are also compatible with the groover, Ferch says.

Dommel with Slip Industries says that her company makes all sorts of finishing tools to follow the groover, including custom tools. "They just tell us what they want and we make the tool," she says. One contractor, she adds, ordered what they call "a butterfly groover," which makes a design like a picture frame. "That's his trademark," she says.

Most contractors clean up their control joints with a V-shape or beveled tool to give a professional look.

For art's sake

Control joints can be more than utilitarian cuts. With a little imagination, they can transform a slab of concrete into a cement canvas that livens up the landscape.

"We do everything in one pour," Levig says, "so we like to use cuts as a border. That's also where we change colors."

The first thing you should do is lay out your mandatory control joints, which include joints in those pesky corners. "We like to cut our joints on a 45-degree angle," he says. "Joints don't have to be totally square all the time. They can be used in your patterns. You don't have to just cut straight lines. Get artistic. Get creative. Make control joints part of the art."

Sullivan with QC says that joints allow you to put different textures on either side of the cut. And with some simple blocking, you can also throw down different colors to create patterns. "The sky's the limit," he says. 🛠️



The butterfly groover.

Photo courtesy of Slip Industries



Tooled joints in stamped concrete.

Photo courtesy of QC Construction Products



Saw cuts and staining.

Photo courtesy of QC Construction Products



Polished Perspectives

by Peter Wagner

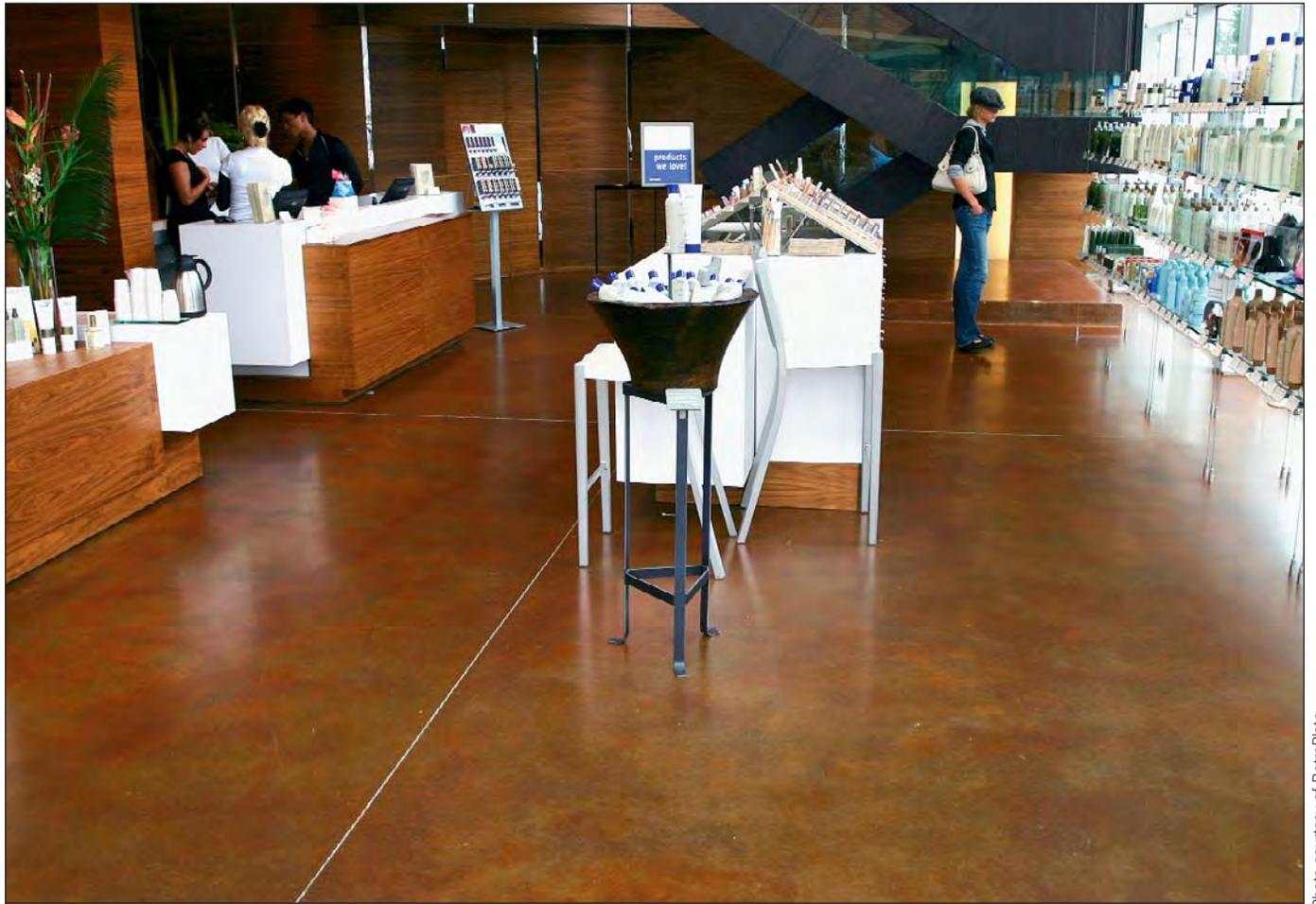


Photo courtesy of RetroPlate

RetroPlate and acid stain on gray concrete.

Getting the Mix Right for Polished Concrete

Mix Design – What do those two words conjure up in our imagination? Architects randomly pulling ingredients off a shelf? Engineers wanting to prove they have the perfect solution? Owners going overboard in their expectations? Ready mix operators using what they have in their silos?

Mix design should be looked at as the foundation for successfully marrying design and performance expectations. And what are the most important ingredients of mix design? Education and communication!

Polished concrete brings many new equations to the table when it is specified. First, but often overlooked, is exactly where it should be placed in the specifications. What is polished concrete? Is it part of the Construction Specification Institute's (CSI) 2004 Master Format of Division 3 for Concrete, or is it part of Division 9 Special Finishes, or is it both?

During my years as a Certified Applicator for RetroPlate, we tended to

take the shotgun approach and hit both divisions, but too often people use only Division 9 and the specification becomes an "I didn't budget for that" item. Today, in my position as marketing director for RetroPlate, I have far greater interaction with both specification professionals in architectural firms and quality-control experts in the ready mix industry, and it appears as though Division 3 is the clear winner.

Fred Herbold, CSS, CSI with SERA Architects in Portland, Ore.,

says he sees polished concrete as part of the placement criteria and feels that the opportunity for bidders to miss the specification is too easy if placed in Division 9.

And from the ready mix side, Tony Allison, Glacier Northwest's head of quality control in Portland, notes the importance of knowing the end use and expectations while designing the mix. As he pointed out to me, the types of materials that are readily available locally will affect the components of the mix as well as what percentage of



RetroPlated, exposed river rock table top matches the floor.

Photo courtesy of Stephens & Smith Const.

each component (sand, aggregate, cement, water, additives) is necessary to deliver the expected results. For example, in the 250 miles between Seattle and Eugene, Ore., the different types of naturally occurring aggregate can change the necessary cement requirements three times. If you're an engineer located in Pittsburg who is designing a mix to be poured in Portland, don't make the assumption that the aggregate will be the same. Instead, assume that it won't be. Local knowledge translates into greater success, along with better cost control.

Do's and don'ts of mix design for polished concrete

Do not!

- Do not use calcium chloride accelerators, as they can interfere with acid stains and densifiers.
- Do not use air entrainment, or at least hold to a maximum of 3 percent. Your finish will not be as tight or reflective (air will not polish), and air-entrained concrete has lower compressive strength. For every 1 percent increase in air, the compressive strength decreases by 5 percent.
- Polymer-based overlays should be avoided, as they do not chemically react with densifiers in the same manner as standard portland cement.
- Do not use topical curing agents that will act as a barrier to densifier penetration. Even products that claim to be "UV dissipative and break down under traffic," can come back to haunt you when it comes time to perform your work.



Flat floor with polished cream, no fines or aggregate.

Photo courtesy of Building Solutions



Polished cream with waviness due to not finishing flat.

Photo courtesy of RetroPlate






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Example of poor finishing differences.

Be aware:

- Be aware of changes in the water/cement ratio. This can alter the strength of the concrete, along with the ability to achieve an optimum finish.
- Be aware that integrally colored concrete tends to have lower compressive strength, along with taking longer to hydrate.
- Be aware, when specifying an exposed aggregate finish, not to use volcanics as part of your aggregate mix, as they are prone to “pop-outs.”
- When specifying an aggregate, know the maximum aggregate size that your local ready mix operator can pump.
- It's good to be “green,” but be smart when specifying pozzolan additions — hold them to 20 percent of your cement weight. During hydration, cement creates the calcium hydroxide with which the densifier reacts, so you need to control the substitution amounts. Note: Fly ash is categorized as either Class C or Class F. Class C has its own cementitious properties, but Class F does not. It is important to know that you have very little control over which type of fly ash you will receive, so err on the side of caution.
- Lastly, don't shortchange the curing process. It is during the curing process that the calcium hydroxide is formed, and it is the calcium hydroxide that chemically reacts with the densifier to tighten and strengthen the floor. For long wearing surface, proper curing is a must.

Steps to success:

- Do use sound aggregate for exposed aggregate floors. Sound, dense aggregate will polish and hold its shine better.
- Do communicate F(f) and F(l) requirements with your ready mix operator so that they can make adjustments for proper finishing time.
- Do talk about finishing requirements — hand trowel, power trowel, metal or plastic blades, curing procedures.
- Do not assume that you know what the customer's expectations are — qualify them up front. Are they “buying” a specific polish level, mix color or aggregate type? Educate your general contractor, ready mix operator and finisher as to exactly what you and your customers' expectations are.
- Know that there is a definite correlation between cracking and the percentage of cement specified in the mix. The smaller the aggregate size, the more cement paste that is required to surround and hold the mix together. With larger-aggregate mixes, your shrinkage and cracking will be reduced. Talk with your mix design experts to ensure that you get both the performance and appearance you require on your project.
- Educate the owner and specifier about the natural variations in concrete and its ingredients.
- Educate the specifier on the variations of materials in different geographic regions.
- Educate all parties on the cost of specifying particular aggregate, sand, and cement. Shipping costs can be prohibitive.
- Convene a pre-pour meeting before it is too late or costly to fix a problem that arises out of poor communication.
 - Are the materials available?
 - Are there special equipment requirements?
 - Is the product or methodology proprietary?



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- Are there trained and certified contractors available with the required expertise and experience?
- Are there regional issues that can affect the timeline or the floor? Has everyone been educated on the potential for carbonization in cold climates? Are there any steps in the process that require controlled humidity?

■ State the obvious — do not assume.

Placement

The flatwork contractor needs to be in on the ground floor. They need to know that a dry shake floor requires plastic blades. They need to know not to burn the floor or ride the power trowel dry. They need to know that any change in technique, amount of water or change in weather can affect the final appearance, or even the ability to provide a polished floor to meet the customer's expectations.

Curing

Improper curing of the floor can defeat proper mix design and placement.

- The best cure is a water cure. It minimizes edge and joint curling that can occur by uneven curing. Grinding curled edges and joints will always expose aggregate, even if the rest of the floor is flat and has only the cream polished.
- Topical curing agents will create a bond barrier to the densifier, dyes or acid stains. Even dissipative products break down unevenly, as UV exposure and traffic are not consistent. To play it safe, grinding deeply with metals is the only true way to remove these products.
- It is during the curing process that the calcium hydroxide is formed with which your densifier will react and create the densification.

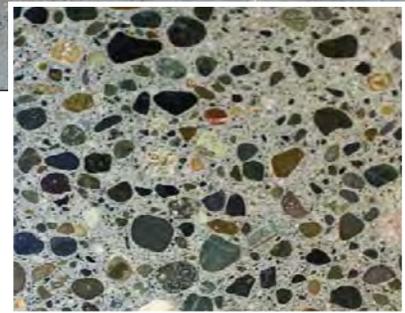
Protection

The method in which the slab is protected is especially important as it can create permanent blemishes in the slab.

- Do not put down wood products that can leach tannins into the slab.
- Any product that can put uneven and/or irregular pressure on



RetroPlate with exposed aggregate in a retail setting.



Large exposed aggregate.

Photo courtesy of RetroPlate

Photo courtesy of Stephens & Smith Const.

the slab can cause a “shading” appearance as the area cures differently.

- Wrinkled plastic sheeting can create a “leathery” appearance.
- Untaped seams will promote an outline pattern of the material used to protect the slab. i.e., a 4-foot x 8-foot sheet of hard board.

Look into some of the new curing products that are manmade, such as UltraCure at www.UltraCure.net. But still remember to tape the seams. Products like this are biodegradable and may be taken to the landfill. After the work is finished, EZcover, by the same company, provides a good, breathable cover with a soft side to lay against the floor, and a harder top layer to shield against contaminants and impacts.

Note: In the event that you are required to perform your work earlier in the construction process than normal, remember that a fully densified floor will stand up better to the abuse of construction.

The most basic ingredient to success is continually educating yourself, and then communicating with all your partners on the project. To be the best, and to deliver the best, you need to communicate — and put to rest your mistrust in sharing your knowledge. 📄

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The flex-shaft BP25H backpack vibrator is ideal for work in medium- to high-slump concrete applications, including small pours, slabs, driveways, stem walls and footings.

It features a 2.5-horsepower Honda gasoline engine and weighs 24 pounds. Its ergonomic design features a swivel shaft connection, quick disconnect knob for easy shaft removal, and built-in oil shut-off. The vibrator is CE compliant and compatible with Multiquip's entire line of steel and rubber heads, except the 2 3/4-inch long rubber head.

The concrete vibrator is offered with seven steel heads and four rubber heads (which are ideal for epoxy). The heads range in diameter from 7/8 to 2 3/4 inches, with a maximum length of 17 3/4 inches. Flexible shafts are from 2 to 21 feet long.

Multiquip's backpack vibrator has enough torque to turn rubber heads. The engine features flow-through ventilation to reduce contamination while its cassette-style design minimizes friction and maintains optimum rpm.

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Wacker engineers have designed a revolutionary high-cycle, motor-in-head internal vibrator. The IRFUN series is the only motor-in-head vibrator in the industry with an integrated, compact electronic converter in the switch housing. This means no more separate converters or high-cycle generators to deal with — just plug it into any construction grade, single-phase 115V portable generator.

The micro-converter built into the on/off switch automatically converts the single-phase 60-cycle to a three-phase 180-cycle. This high-tech, solid-state electronic brain even senses "dirty power" (low voltage from a too-small extension cord, erratic voltage from a faulty generator, etc.) and shuts the vibrator down before it can become damaged.

The sealed switch housing encloses electronic components that are embedded in a special resin to ensure protection against moisture, impact and vibration.

Three IRFUN models are available with the converter system. The IRFUN 38 has a 1 1/2-inch diameter head and an effective compaction diameter up to 20 inches. This unit can compact up to 34 cubic yards of concrete an hour. The midsize model, IRFUN 45, has a 1 3/4-inch diameter head and an effective compaction diameter up to 24 inches, which can compact up to 41 cubic yards of concrete an hour. The largest vibrator, IRFUN 57, has a 2 1/4-inch diameter head and an effective compaction diameter of 33 inches to compact up to 57 cubic yards per hour.

The IRFUN motor-in-head internal vibrators are built for reliability and require minimal maintenance. Disassembly and repair are fast because repair parts are designed as component groups. These vibrators feature Class H windings, the most heat resistance available, and motor protection if the vibrator is run outside of the concrete.

www.wackergroup.com

Mounting bracket for concrete countertop vibrators



VIBCO Inc. now offers a new mounting bracket system for use with electric vibrators. This state-of-the-art bracket was developed and designed with the concrete countertop industry in mind.

The UMC-1 bracket mounts easily to any casting table with lag screws and can be easily moved. Concrete countertop contractors can place the vibrator in the best position to provide localized, powerful vibration, and then move it to the next spot for a perfect finished product.

www.vibco.com
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Good vibrations

The Multivibe line from JLin Corporation offers a variety of concrete vibrators for decorative concrete, including the Sidewalk Buddy and the Multivibe Cordless Hummer Screed.

Sidewalk Buddy is a vibrator/finisher designed for production edging, grooving, trowel-finishing concrete and vibrating decorative countertops. Round vibrators have problems separating the aggregate in thin slabs for countertops. Using the Sidewalk Buddy's vibrating trowel for surface vibration eliminates the problem.

The Multivibe Cordless Hummer Screed is a double-duty machine that also serves as a vibrator. It uses the same vibrator as the gas-powered model, but because it is electric, cordless and lighter, it can be used in places other concrete vibrators can't. The product can be disassembled with no tools and be used as a vibrator, a screed and as a hammer drill.

www.multivibe.com
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Longer-life cycle

Makita has introduced the 18V LXT Lithium-Ion cordless 8-foot concrete vibrator. With lithium batteries and a self-cooling charger, this vibrator can produce 280 percent total lifetime work with two times more cycles. The vibrator is compact at only 105.5 inches and weighs less than 12 pounds. The motor produces 13,000 vpm. A 1-inch diameter head supported by dual ball bearings means maximum consistency. Its ergonomic dual directional switch means the tool can be held in either horizontal or vertical positions. The vibrator also features a protective cover on the switch and battery to prevent contamination.

There is a three-year warranty on the tool and one-year warranty on the battery. The vibrator comes with 2 LXT Lithium-Ion 3.0Ah batteries, a 45-minute optimum charger that has a built-in fan to cool the battery, and a tool case. 

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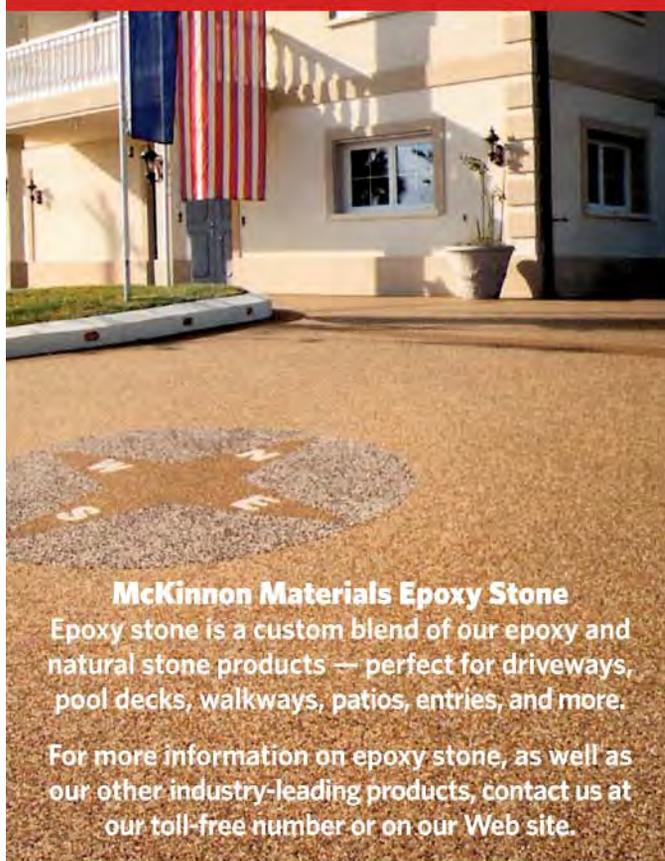
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Catch

Some Air!

Photo courtesy of Euclid Chemical Co.

A look at the use of air entrainers in decorative concrete.

by Mike Dawson

Unless you live in sunny vacationland, you need something to relieve the stress when you work with exterior concrete — a pressure release. Fortunately, your ready-mix supplier is probably giving you the tiny bubbles you need to make you happy. That is, a structured air system created by air entraining agents, which are admixtures used when concrete will be subject to freeze-thaw cycles.

Freezing and thawing causes expanding and contracting of molecules. This creates pressure that needs a route to the surface,

which can result in micro-cracks. Air entraining agents build a structure of bubbles that relieves that pressure. “It’s a whole network of escape valves,” says Sean Fallon, product manager for admixtures at The Euclid Chemical Co., one of several major manufacturers of air entrainers.

Freeze-thaw is not the only consideration. Contractors in many parts of the Western U.S. know that sulfates in soils and aggregates can cause expansion due to crystal formation. Air entraining agents help remedy this problem as well, again through the bubble structure.

Air entrainers have been around for more than 75 years. Back in the 1920s, the

industry figured out that a good air entrainer could be made from resins refined from a wood rosin similar to the pine tar used on baseball bats.

In a sense, the resin does to concrete what dish soap does to water. (And just in case you know anybody who believes he can get air in concrete with soap, tell him you read it here that it can’t be done. How sudsy is dish soap in hard water?)

In recent years asphalt manufacturers began using the same resins, putting pressure on the supply. Chemical makers in turn developed synthetic alternatives, which are less expensive, but some sources say they are also less predictable.

Hitting the right percentage

Ready-mix plants in freeze-thaw regions usually produce most of their concrete with entrained air. The industry standard is 6 percent air content, but hitting a specified percentage of air is difficult because of the variables involved, so there is a leeway of 2 percent.

The reason for this, Euclid's Fallon says, is the many variables that come into play when it comes to making bubbles. The surface tension of bubbles is affected by everything from the type of admixture to chemical variations in the aggregate to the relative smoothness of the mixer blades in each truck. With so many forces at work, there is no way to hit an exact percentage every time.

However, the suppliers of entraining agents know what works in their markets. "Every area will have a preferred air entrainer," Fallon says.

If the truck arrives at the jobsite and the percentage of air is low, what do you do? Rather than send the truck back, Fritz-Pak offers a \$3 fix. Air Plus is a premeasured admix, one sack per truck, to make corrections in the field. Each sack corrects by 0.5 to 1 percent.

Gabriel Ojeda, president of the Dallas-based admix producer, says that Air Plus, a Vinsol resin product, can also be used as a primary air entrainer on a truckload basis in Southern regions of the country where batch plants do not routinely entrain air. Super Air Plus, a more concentrated version, is suggested when material characteristics are less consistent.

There are a few exceptions to the 6 percent standard and they apply specifically to decorative concrete. Color hardeners and dry shake colors can create blistering at 6 percent air, says Chris Sullivan of QC Construction Products, Madera, Calif. He advised that if you are using color hardeners, tell the plant you need 4 percent air content. Air content can also be fine tuned downward with products like Fritz-Pak's Air Minus.

Another conflict to be aware of is carbon black color agent. Carbon black will make it "difficult but not impossible" to get the air into the concrete, according to admix maker Grace Construction Products. Higher amounts of air entraining agents will probably be required because carbon black will interfere. Thomas G. Weil, the company's manager of technical services,

advises that when using integral colors, testing should be done before the use of air entraining agents to ensure that the color product does not affect air entrainment.

Choosing the right air entrainer

Because of the variables in local materials, admixture companies offer a wide range of entrainers, from natural to synthetic.

For example, Grace Construction Products, a business of W.R. Grace & Co., makes at least seven air entrainers. These agents are made either from one of three raw materials or from a blend of the three.

The two most common materials are tall oil and wood rosin. Grace's Daravair 1000 and 1400 are made from wood rosins. The company's Darex II is formulated with tall oil, and Darex AEA from a synthetic surfactant. Daravair AT60 and AT30 are a blend of wood rosin and tall oil.

Of those options, Weil says, wood rosins act the fastest, so if the concrete mixing cycle is short, such as in precast, Daravair 1000 or 1400 might be the better choice. Tall oils take more time to build air, so a job with a longer mixing time might use Darex

II. "However, the concrete producer should always test before choosing the air entraining agent that will work best with its materials and production process," Weil says.

The same considerations apply to decorative concrete as to bridge building — always test, Weil says.

Fallon at Euclid has similar advice. This company offers no less than 13 air entrainers. The higher grades contain Vinsol resin, which is a wood product obtained through the pulp-making process. Other mixtures use various modified resins or synthetics. Euclid offers entrainers in both dry and liquid form.

Fallon says regional sales representatives not only know the nature of local materials, but the mechanical characteristics of each batch plant that buys air entrainers. Some plants are more efficient at entraining air than others, he says, so each requires the right admix to create the right surface tension on the bubbles.

When it's done right, the decorative concrete work will survive many a deep freeze, while hopefully the contractor who installed it has escaped to vacationland to sip something with tiny bubbles. 🍹

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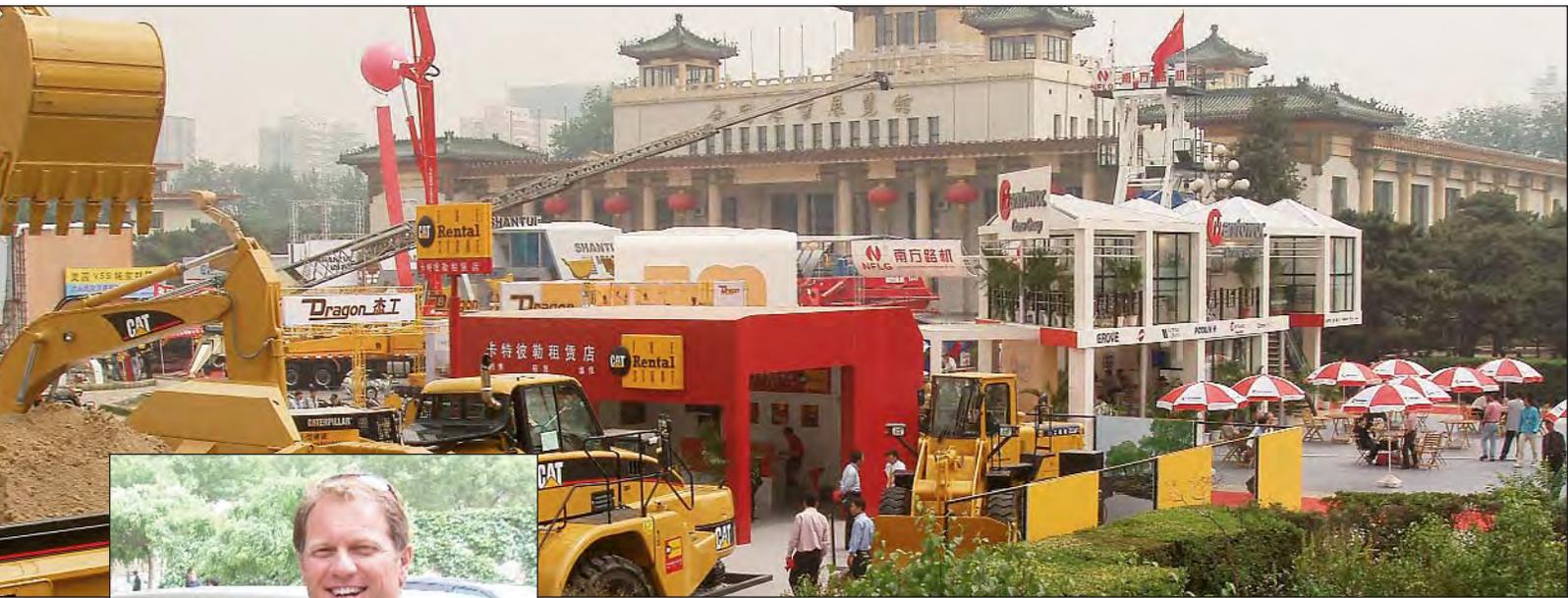
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The Decorative Road To China

Editor's Note: In May, Doug Carlton and Paul Godfrey presented a seminar at World of Concrete Asia, held in Beijing. Two 75-minute classes, titled "What's New in Decorative Concrete," showed off colorful pictures of stamping, staining, overlays, polishing, concrete countertops and vertical surfaces. Business owners and managers from all over the world attended the workshops.

Deep down, I was hoping the Great Wall of China was a poured-in-place concrete wall utilizing a crafty form liner. It's not, but if it was constructed today I bet it would be. Anyway, you may be asking yourself what a presentation on decorative concrete in Beijing has to do with you and your business. Believe me, I asked myself the same thing several times during the 12-hour flight over. If you even noticed the "CONEXPO Asia" banners at the 2006 World of Concrete in Vegas, you probably never gave it a second thought. I

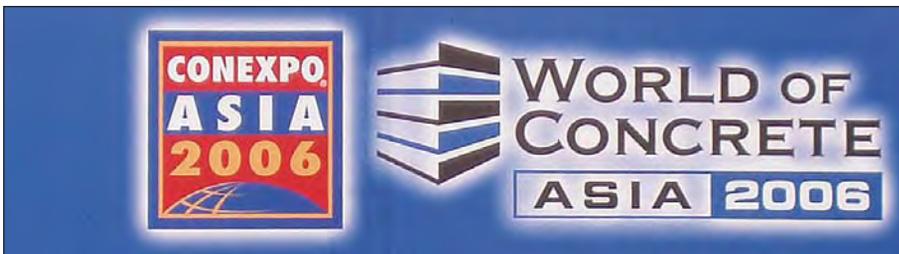
personally thought the first-ever World of Concrete Asia had very little significance to the decorative concrete industry. I was wrong.

More than 75 countries were present with an attendance of more than 13,000 industry leaders during the four-day event. The thing that surprised me the most was the interest from other countries. Some attendees were very familiar with the decorative practices and projects performed by American contractors. Other countries inquired about basic decorative methods to help enter the market.

The Chinese are preparing to welcome the world to the 2008 Summer Olympics. Their existing concrete surfaces are well behind our decorative designs. What I can tell you about May 15 through 18 is that the seeds of the decorative concrete industry in China were sown. The fastest-growing economy in the world got a small taste of what the rest of the world has known for a long time: Decorative concrete is the best choice for hardscapes and high-traffic areas, bar none and pound for pound. The timelessness yet affordability of decorative concrete is no longer a secret across the world. For decorative concrete to enter the Chinese market is nothing more than a natural progression of a great industry.

The opportunities in China will be the same as all other countries, not only for

Photos courtesy of Doug Carlton



contractors installing decorative concrete but for manufacturing, distribution, and training services. I believe education is key to insure the right product is used in the correct fashion to complete a successful decorative project. This is the case regardless of what country we're talking about.

Shanghai and Hong Kong appear to be the most progressive of the major cities in China and will probably spearhead the decorative market. I believe the decorative road to China most likely will run through Europe. Interest will grow until the decorative market gains a strong foothold. Most of us have watched the same thing happen in the U.S. over the last 15 years.

Opportunities for American companies to help fill the market are a strong possibility. Tight control will be a must because of the distance as well as the replicating mindset of the Chinese culture. The Chinese are very good at duplicating products. It is doable because American corporations are popping up all over Asia.

There is no doubt that America is setting the standard for the decorative industry worldwide. Our methods and designs are shaping the industry. The educational opportunities we have from seminars, expos, magazines, and television are helping to develop solid and consistent decorative projects. Training has evolved from not just "how-to" to "what to do when something goes wrong." I encourage you to take advantage of the great educational opportunities available today. Every year the World of Concrete in Vegas offers several three-hour decorative concrete sessions presented by industry leaders. These classes cost around a hundred bucks for a three-hour presentation and are worth every dime. To gain tips from the heavy hitters of the decorative concrete industry for less than \$35 per hour is a bargain. If nothing else, staying away from the tables and slots for three hours may prove to be profitable.

For American contractors to continue to lead the decorative industry worldwide we must keep improving. Sharing successful practices and tips is good for the industry. None of us are as good as all of us. The last word on China and how it relates to the U.S. is this: During a couple of warm days in Beijing, Paul and I showed pictures of some of the best red, white, and blue decorative projects in existence. That is something we can all be proud of. 📱

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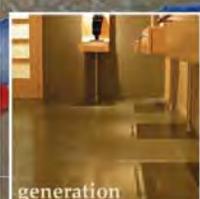
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Business Strategies



Photo courtesy of Dana Boyer

A Concretizen employee discusses the details of a job with the homeowner.



Photo courtesy of Chris Becker

The outdoor environment section of the showroom at Becker Architectural Concrete.

Customer Service

by Wendy Ardolino

Decorative concrete contractors offer different services, use different tools and brands and prefer different application techniques. But if a common thread runs between them beyond their interest in decorative concrete, it is the knowledge that customers keep their businesses going. The bottom line is, good customer service can make or break a company.

Old-fashioned values

Ira Goldberg, of Beyond Concrete in Keyport, N.J., has owned a concrete business for 23 years and been in the trade for 31 years. In that time, he has stayed with the same customer-service strategies: “The customer is always right” and “the customer comes first.” Another critical aspect of his company’s success, Goldberg says, is always returning any customer’s call within 24 hours. “People especially like the fast response. Some are even surprised that we call back that fast — especially if it is a complaint, which doesn’t happen that often.”

Dana Boyer, owner of Concretizen, located in Apache Junction, Ariz. also has a

simple style of customer service that has worked for her since she started her company. “My approach to customer service is still the same. I treat the customers the way I would want to be treated. I give them a product that I would personally be happy paying for. I give them educated options and let them make an informed decision. Customer service is everything to my company. Without customer service I wouldn’t be in business. Our mantra is, ‘We are what others are not.’ I fully believe that and will go the extra mile to know they are happy.”

Part of the team

One good way to ensure good customer service is to make sure that customers get what they want. “Our No. 1 customer service strategy is simple communication, from scheduling, to progress reports, to digital images sent to customers to show updates or completed work,” says Chris Becker, owner of Becker Architectural Concrete in South St. Paul, Minn. “We want our clients to feel as though they are our only customer.”

Becker says the company’s 4,000-square-foot showroom is a great customer-service tool that displays the company’s talent and inspires customers’ own ideas throughout the design process.

Gerald Taylor, owner of Images in Concrete, in El Dorado, Ark. also emphasizes client communication and involvement. “At Images In Concrete, Steven Ochs and I allow the client to be part of the design team,” he says. “We feel that is crucial in the progression of the job. We take their ideas and create scale drawings. They cross out what they don’t like. We do this to a point until it’s pleasing to them and practical for us to do. Then we have them sign off. When we finish the work they call it theirs because we really worked with their ideas.”

Customer involvement is also an important aspect at Concretizen. “My customer has a lot to do with the decision process,” Boyer says. “I try to get to know them, see how they are going to use the floor, and realistically, maintain the floor. I talk to them about what they expect from the finished products and have them visually show me objects that they can relate

to in regards to color and textures. From there I dial in the project and on the final day before sealing, I have them be present and I fine-tune things to their liking. We definitely are a 'custom' company."

Communicating the customer's role in the final product is also important for Lee Levig, owner of Concrete Works in Fairfield, Calif. "It is always an evolution." Levig says that his preparation for a job has changed since he started in the business. "I think customers need to know what to expect. Don't oversell the job — I think that is the key." This includes preparing the customer for concrete maintenance and letting them know that the job is done by hand and that there are always imperfections, Levig says.

Delegating roles

Starting out with three employees and increasing to 15 over the years has helped Becker take a more specific approach when it comes to customer service. "We have defined roles that are in addition to my employees' everyday responsibilities. One takes care of warranty and service work, one takes care of scheduling and updates — something we do with every active customer every Monday morning. We have a person

dedicated to servicing our retail clients, like IKEA, for whom we fabricate concrete countertops, so there is one person that information flows to for almost every aspect of our customers' experience." However, Becker says that all his employees participate in ongoing weekly meetings to discuss customer feedback from surveys, on-site discussions and focus group meetings.

After the work is done

Once a company finishes a job however, their customer service is not done. "We work on cleaning up after ourselves," Taylor says. "This speaks volumes in itself when some contractors in other crafts leave such a mess."

In the longer term, there are many ways a company can leave a good impression. By educating its customers, a business can save both the customers and the company itself from a nightmare. "The big thing I see in decorative concrete today is that a lot of my competitors don't disclose the maintenance level for concrete," says Levig, whose son just started a side business to maintain concrete because a lot of customers don't know how. Levig's business practice is to educate customers up front so they know

what to expect — what is normal wear and tear and what would be covered under warranty.

Levig says you need to know how to identify when to go back and fix something and when to say no. If a customer has a crack in the entrance of their business and they are irritated about it, you may not be required to go back and fix the crack, but you should, Levig says. "There is a fine line between customer service and customer warranty and as a business you need to decide when to cross that line."

Providing good follow-up after the job is done can only help your business. "Yesterday I picked up and delivered a gallon of wax and neutral cleaner to a very nice family," Taylor says. "I did a job for them that was featured on the cover of *Concrete Decor* way back in 2003. That could be considered customer service after the job. They always go out of their way to let the guests they entertain know who did their floor."

And leaving a good impression on a customer will most certainly pay off. "One bad job sure gets known 10 times faster than one good job," Goldberg says. 📱

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Product Profile



Photos courtesy of Les Davis

Dye-N-Seal from Brickform

by Wendy Ardolino

Dye-N-Seal from Brickform is a translucent dye designed to penetrate and color any non-porous cement-based surface. It can be used with or without a stain.

“Dye-N-Seal can be used to coordinate colors to create an artistic look,” according to Les Davis, a spokesperson for Brickform. “There is more ability to do this with dye than with acid stains because there is a much more broad color palette: reds, blues, greens, yellows. You can combine colors to create new ones, which is not possible with an acid stain.”

Clint Howle, of American Concrete Concepts, created the product because he needed a coloring system that worked with concrete and more specifically, worked

great with polished concrete. After his company used the product for a couple of years for touch-ups or basecoats, Brickform debuted Dye-N-Seal at World of Concrete this year. Howle explains that a contractor can either use this dye in conjunction with a stain or use it by itself. Some contractors use it exclusively, he says, saying they will never go back to acid stain.

The dye penetrates the surface of newly cured or existing concrete, creating a protective layer of intense color that will not chip, crack or peel. The colors can be mixed together to create an unlimited number of variations, and when applied properly, Dye-N-Seal offers a wide range of color intensities from muted to vivid colors. Imperfections in the concrete can be integrated into a variegated design similar to marble or agate.

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Dye-n-Seal is translucent and does not depend on a chemical reaction. Davis explains that it is much more forgiving than similar products and is very easy to work with, which reduces the workload dramatically. "A job that takes three days to acid stain and seal, you can do with Dye-N-Seal in one day."

The product dries quickly, reducing installation time and construction costs. It also ships in powder form, unlike many of its competitors, so there is no hazardous-shipping cost with this product. Later, it is mixed with acetone for application. Dye-N-Seal is durable enough for commercial applications such as restaurants, showrooms and retail spaces. Its fast-drying qualities make it excellent for vertical applications, stencils, and logos. It is available in 32 standard colors, packaged to color one-quart, one-gallon and five-gallon containers of acetone. After the application area has dried, it should be sealed for added durability. 🛠️

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Product News

Like a box of chocolates

American Specialty Glass Inc. is offering a free Terrazzo and Landscape Glass Sampler Kit, shaped like a box of chocolates. The inedible 9-inch by 12-inch box contains 24 different colors of #1 genuine glass chips; six packets of "Fines" and "00" sizes, including silica sand substitute; four landscape color mixes including "River," "Forest," "Sunshine" and "Caribbean"; six light blue glass sections illustrating the shade variations in sizes #0, #1, #2, #3, medium and large; a half-inch to 1-inch colored glass rock; and a miniature corked bottle filled with #0 glass, featuring the American Specialty Glass logo and contact information.

American Specialty Glass is sold in 1-, 5-, 10-, 25- and 50-pound plastic bags. The bags can be boxed and sent anywhere in the United States; anything larger than 50 pounds is shipped on a palette.

www.americanspecialtyglass.com
(801) 294-4222

Natural concrete stains



New from Eco Safety Products, ECO ProCote Natural Soy Penetrating Concrete Stain is an environmentally safe, semi-transparent, architectural concrete stain made from bio-based soy esters. The product was developed to meet several federally imposed initiatives and can be used for porous vertical and horizontal surface applications.

The ECO ProCote is a non-toxic, low-VOC, low-odor permanent concrete stain.

Earlier versions of soy stains did not seal or bond, which led to a short life span. The ECO ProCote formulation allows proper penetration and a sealing process without premature drying or lap marks. The product can be spread at 400 to 600 square feet per gallon.

www.ecosafetyproducts.com
(877) 366-7547

Three heads are better than one

The new Blastrac BMG 435 grinder and polisher is a three-headed planetary machine designed for multi-purpose use on concrete,

terrazzo, natural stone and wood surfaces. On concrete, the BMG 435 cleans and prepares the surface, levels uneven areas, removes coatings, cleans glues and mastics, and polishes. On terrazzo and natural stone, the grinder cleans dirt, grease and scuff marks, and grinds and polishes. On wood, it cleans paint and coatings, and sands the surface for refinishing. The machine's planetary system results in easier handling and smoother grinding with fewer swirl marks.



www.blastrac.com
(800) 256-3440

Versatile products meet new standards

Even after the new phase of the South Coast Air Quality Management District's Rule 1113 goes into effect on July 1, Versatile Building Products will meet the VOC requirements in rollable coatings for industrial, retail, and residential floors.

The new SCAQMD maximum VOC for industrial coatings is 100 grams of VOC. Versatile's Chemical Resistant Urethane 5310 clear and pigmented coatings go above the standard. The products are polyester resin-based as well as UV-, chemical- and abrasion-resistant.

Requirements for all residential, retail, and office coatings must be 50 grams of VOC or lower. Polyurea 5000 and Waterborne CRU 5400 will meet the requirements. Polyurea 5000 produces a shiny clear coat, contains 100 percent solids and can be applied up to 10 wet mils. Waterborne CRU 5400 is a chemical-resistant urethane with excellent wear, abrasion resistance, and UV stability. The film-build, gloss and chemical resistance are comparable to solvent-based systems. It is nonflammable and therefore can be safely applied near water heaters or HVAC systems.

The South Coast Air Quality Management District (SCAQMD) includes Orange, Los Angeles, Riverside and San Bernardino Counties. SCAQMD is continually increasing efforts to reduce VOCs because they contribute to ozone formation. This rule can be viewed at <http://www.aqmd.gov/rules/reg11/r1113.pdf>.

www.deckcoatings.com
(800) 535-3325

Take control of moisture

Ardex Engineered Cements has again teamed up with Wagner Electronics to tackle excessive moisture vapor emissions in new and existing concrete slabs. Wagner Electronics' Rapid RH is an all-in-one probe that combines a moisture sensor, power supply and display into a single, low-cost device that is inserted directly into the concrete floor slab. Each probe has a liquid crystal display to



give you accurate relative humidity and temperature readings at the touch of a button. In addition, the Rapid RH probes are disposable and lie flush with the surface of the concrete, both avoiding damage and eliminating the need to remove them.

www.ardex.com
 (724) 203-5000

Two-in-one unit

Mi-T-M Corp. is now manufacturing two air compressor/generator units available in portable and skid/truck mount models that increase productivity by condensing two vital pieces of equipment into one machine.

Features include: 6.5- or 13.0-horsepower Honda OHV engine; industrial 1,800 or 3,500-watt generator; quality single-stage or



two-stage compressor; durable stainless-steel braided discharge hose; 12-inch or 16.5-inch fly wheel for extra cooling; 14-gauge powder-coated, two-piece belt guard; 7-gauge base plate; powder-coated 8-gallon twin tank receivers; regulator and two gauges for tank and outlet pressure; and manual drain valves for proper maintenance. The portable unit comes with two pneumatic tires with tubes, steel hubs and convenient lifting handles.

www.mitm.com
 (800) 553-9053

Paint makes concrete WaterTite

Zinsser introduces WaterTite-LV Waterproofing/Concrete Masonry Paint, a low-VOC latex-based waterproofing paint for interior and exterior concrete block, cast concrete, stucco and other masonry. The paint combines a waterproofing resin with microspheres to form an impermeable barrier that stops 12 pounds of hydrostatic

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pressure, making it great for basement walls and other interior concrete and masonry surfaces. It is effective at weatherproofing retaining walls and other exterior concrete and masonry structures to protect against wind driven rain. It also prevents the exit of water from fountains, reflecting pools and canals. WaterTite-LV has a slightly textured white finish that fills micro-cracks and voids. It can be used as a

one-coat primer, paint, or a waterproofer or weatherproofer when applied in two coats. WaterTite-LV can be tinted to most off-white or pastel colors. Applied by brush or roller, the paint can recoat in two hours. Unlike some latex-base waterproofer, it can be applied to new concrete or stucco after just 14 days and is formulated to resist efflorescence. WaterTite-LV is available in 1-gallon and 3-gallon pails.

www.zinsser.com
 (732) 469-8100

enCounter in the kitchen

Brickform's new enCounter offers virtually unlimited color and design combinations. The system of products includes specially formulated mixes, finishes, coloring agents and forms that allow for the creation of countertops anywhere in the home.

enCounter Mix is formulated for less shrinkage and curling. A special blend of aggregates and cement ensures low water demand



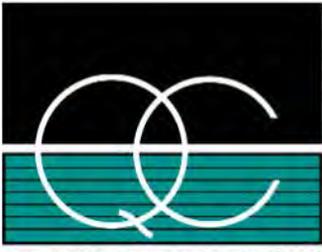
with good workability. No admixtures are needed and it can be mixed on site for either cast-in-place or pre-cast counters. The mix is available in 50-pound bags of white or gray mix.

enForm Edge Forms are flexible, re-useable forms that make it easy to add textured edges. They are available in several different patterns.

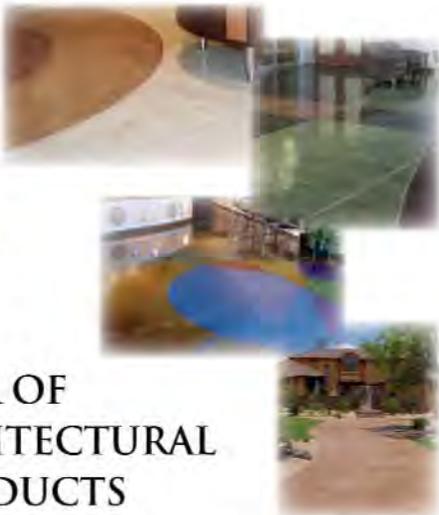
enMagic Micro-Topping can be used to produce textured effects, or to smooth out any imperfections.

enColor Integral Coloring System allows countertops to be matched to any color scheme. enPoxy is a protective, stain-proof sealer used to keep the countertops protected from heavy usage.

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Mold Release Coating 6310, from Huron Technologies Inc. of Leslie, Mich., is more environmentally friendly than release agents such as diesel fuel or fuel oil. The new release coating can be used on all molded concrete products and is biodegradable, solvent free, and non-silicone. Release Coating 6310 is designed for fast cleanup — residue is easily and quickly washed away with water. It is available in 5-gallon containers and 55-gallon drums.

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Photographs courtesy of Concrete Restoration, Inc. (Seattle, WA)

Association News

American Concrete Institute

ACI co-sponsors concrete canoe competition

The American Concrete Institute (ACI) was a co-sponsor for the 2006 National Concrete Canoe Competition, held this year in June in Stillwater, Okla. ACI joined founding sponsor Degussa Admixtures Inc. and co-sponsors Baker Concrete Construction, CEMEX, Pennoni Associates, ICS Penetron International, Bentley Systems Incorporated, U.S. Silica Company, and Propex Concrete Systems in supporting the competition.

The three-day event featured teams of student engineers from more than 20 colleges and universities across the country competing in four main categories: aesthetics and adherence to design parameters, a technical paper, a business presentation and races.

The University of Wisconsin-Madison came away victorious for the fourth straight year.

www.asce.org/inside/nccc2006/index.cfm
www.asce.org

New references for concrete professionals

The American Concrete Institute announces the availability of four new publications:

440.1R-06: Guide for the Design and Construction of Structural Concrete Reinforced with FRP Bars — This guide offers general information on the history and use of FRP reinforcement, a description of the unique material properties of FRP, and guidelines for the construction and design of structural concrete members, reinforced with FRP bars.

522R-06: Pervious Concrete — This document provides technical information on pervious concrete's application, design

methods, materials, properties, mixture proportioning, construction methods, testing, inspection and more.

SP 234: Seventh CANMET/ACI International Conference on Durability of Concrete — These proceedings of the Seventh CANMET/ACI International Conference on Durability of Concrete, held at the end of May in Montreal, contain 50 papers related to concrete durability. The diverse papers in this publication include corrosion inhibitors for reinforced concrete, durability of concrete with recycled fine aggregate, and self-curing, shrinkage-free concrete, among others.

SP 235: Eighth CANMET/ACI International Conference on Recent Advances in Concrete Technology — These proceedings of the Eighth CANMET/ACI International Conference on Recent Advances in Concrete Technology, held at the end of May in Montreal, contain 17 papers related to recent advances in concrete technology. Topics covered in this publication include: self-compacting concrete, shrinkage, self-consolidating concrete, and more.

These publications can be ordered from the American Concrete Institute.

www.concrete.org
(248) 848-3800

American Society of Concrete Contractors

Companies, contractors lend a hand

A dedication ceremony for Tchoupitoulas Triangle Park in New Orleans was held in March. The decorative concrete hardscape installation was a project of the Decorative Concrete Council, a specialty council of the American Society of Concrete Contractors, St. Louis. The park is being considered as a possible memorial to the victims of Hurricane Katrina.

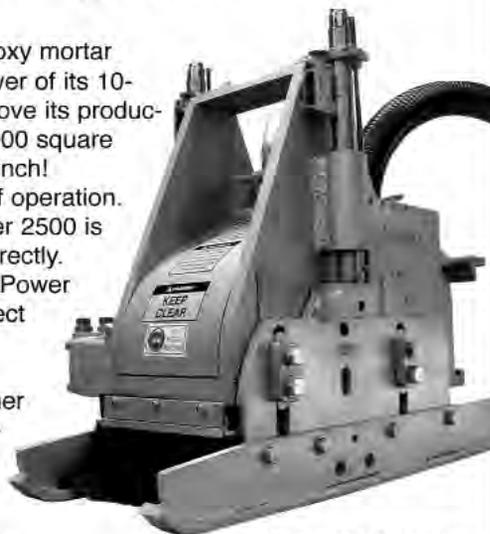
All materials and labor were donated by DCC members. Companies supporting the event included Artcrete, Brickform, Butterfield Color, CSolutions, Davis Colors, Engelman Construction, Fritz-Pak Corp., Greystone Masonry, Hanley Wood, Lafarge North America, Lloyd Concrete Services,

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www.ascconline.org

ASCC catalog

The American Society of Concrete Contractors has published its 2006 Product Catalog.

New to this edition is the "Guide for Surface Finish of Slabs on Ground." This book is designed to help contractors inform owners, specifiers, architects and engineers of the surface finish of slabs-on-ground or grade. The catalog also includes numerous publications and other tools covering safety, decorative concrete, and cast-in-place installation. All publications are available at a discount to ASCC members, or at the full-price for non-members. The publications can also be purchased on the association's Web site.

www.ascconline.org

Concrete Homes Council

Concrete Homes Council celebrates fifth anniversary

In celebration of its fifth anniversary, the Concrete Homes Council has launched a new Web site, www.concretehomescouncil.org. Established to promote removable concrete form (RCF) home

construction, the CHC is an alliance of concrete system providers, contractors and industry partners, under the sponsorship of the Concrete Foundations Association of North America (CFA). Geared specifically for architects, engineers, builders, developers, concrete contractors and government agencies, the CHC site outlines RCF construction methods and benefits. It also features select homes built by alliance members and members' customers.

www.concretehomescouncil.org

(319) 895-0761

Portland Cement Association

PCA names new vice presidents

Portland Cement Association named The Honorable John Spitaleri Shaw vice president for legislative affairs. He will manage PCA's federal legislative advocacy efforts on a variety of fronts including environmental compliance, transportation and infrastructure legislation.

Thomas B. Carter has been promoted to staff vice president of regulatory affairs. He has served as PCA's director of environment, health and safety since 1997.

PCA also named David S. Hubbard as staff vice president of legislative affairs. Hubbard, formerly PCA's director of legislative affairs, has represented the interests of the cement industry on Capitol Hill for the past 16 years. 📄

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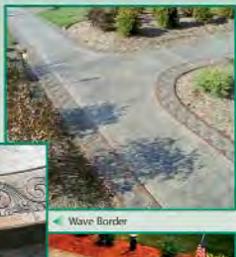
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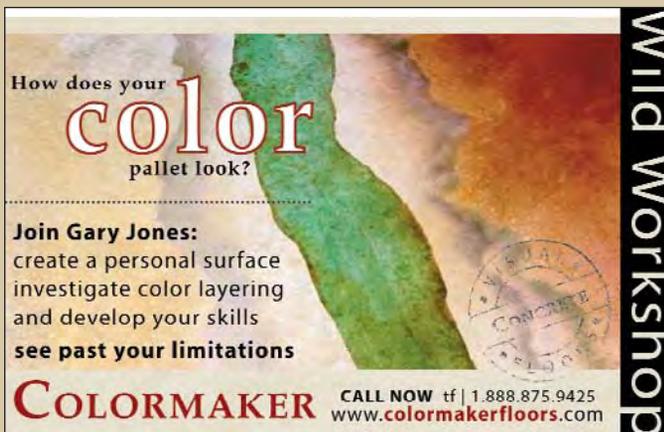
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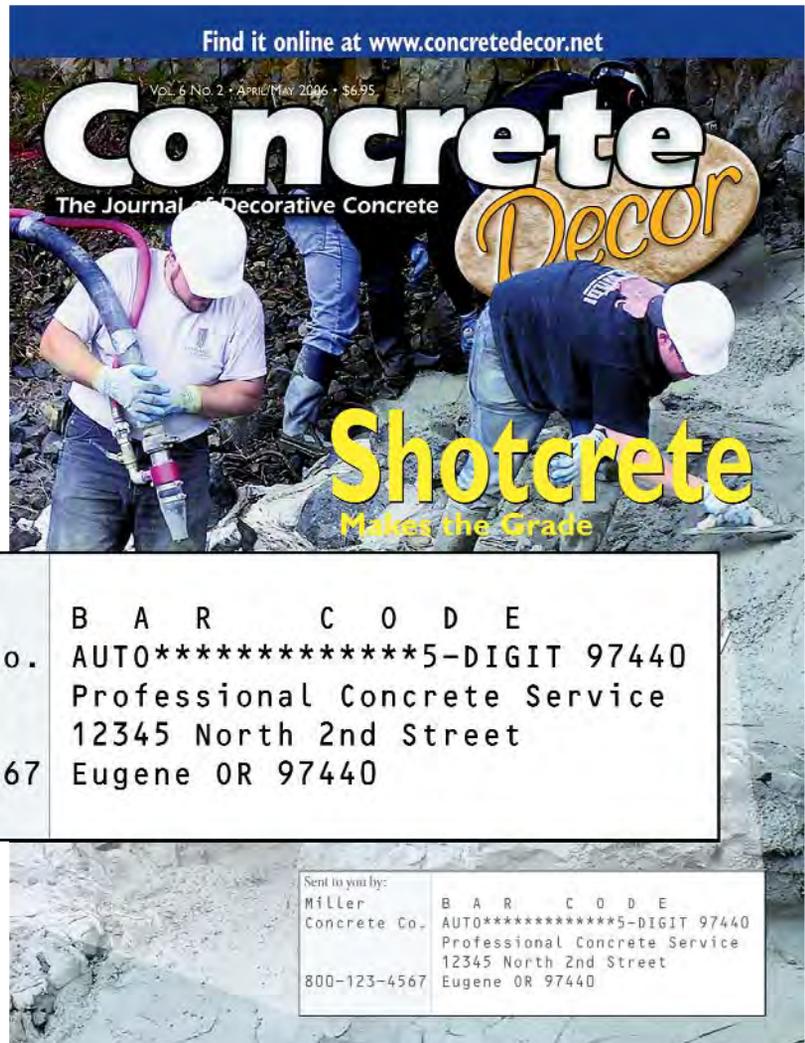
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Around the pool, Lacker experimented with a beach design that he planned to recreate at the Dolphin Mall in Miami. He applied an

overlay over the area around the pool and created an ocean blue both in the pool and around it, using SuperStone integral blue color in the overlay and blue SuperStone dyes on the surface. On the rest of the pool deck, he used SuperStone acid stains, tinting and dyes to create a sandy color on the surface. Then he finished with a clear, solvent-based, non-skid acrylic sealer, resulting in a beach away from the beach.

Look for more on GLC3's Dolphin Mall project in an upcoming issue of *Concrete Decor!* 

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