

Concrete Decor

The Journal of Decorative Concrete

VOL. 5 No. 4 • AUGUST/SEPTEMBER 2005 • \$6.95

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Employee Time Card

Name: DAVID B.			Dates: AUGUST 15-19			
Day:	Start:	Lunch:	End:	Jobsite:	Activity:	Hours:
Monday	7	:30	3:30	Morris	Gen	8
Tuesday	7	:30	3:30	"	"	8
Wednesday	7	:30	3:30	"	"	8
Thursday	7	:30	4:30	"	"	7
Friday	7	:30	4:30	"	"	9

Employee Signature: *David B.* Total Hours: *42*

THE OLD SYSTEM

- Workers control payroll
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Employee Report

David Burns

Jobsite Name: Morris Property Date Range: 8/15/2005 through 8/19/2005

Day	Start	End	Activity	Hours
Mon 8/15	7:19 AM	12:02 PM	Prep	4:43 hours
	12:40 PM	3:36 PM	Prep	2:59 hours 7:42 hours
Tue 8/16	7:21 AM	12:06 PM	Formwork	4:45 hours
	12:37 PM	3:42 PM	Formwork	3:05 hours 7:50 hours
Wed 8/17	7:16 AM	12:04 PM	Formwork	4:48 hours
	12:33 PM	3:44 PM	Formwork	3:11 hours 7:59 hours
Thu 8/18	7:18 AM	12:25 PM	Texture/Seal	5:07 hours
	1:05 PM	3:42 PM	Texture/Seal	2:37 hours 7:44 hours
Fri 8/19	7:17 AM	11:50 AM	Texture/Seal	4:33 hours
	12:36 PM	3:41 PM	Texture/Seal	3:05 hours 7:38 hours

Employee total 38:53 hours

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CIRCLE #39 ON READER SERVICE CARD

Dear Readers,

Believe it or not, nearly five years have elapsed since the first issue of *Concrete Decor* was published. Those years have proven to be a valuable learning experience — one that becomes increasingly rewarding with each new issue we publish. Our knowledge of architectural concrete applications has grown, but more importantly, so has our desire to deliver to our readers the industry's most insightful and educational articles on decorative concrete. As a family that's been in publishing for 150 years, our primary goal remains editorial excellence.



It's at this time of year that we once again start to consider what *Concrete Decor* magazine will focus on in the coming year. Each year, we spend considerable time researching and discussing what we'll write about. And always, we seem to walk away from the table sensing we've missed something important. It's not easy to anticipate industry trends or predict the direction of consumer interests, or most importantly, to decide the direction *Concrete Decor* will choose to take its readership. Often, we don't have much information on what our readers would like. So, rather than rely on educated guesswork, we would like to ask for your help.

We need your input to keep *Concrete Decor* relevant to the work you do each day. Keeping you up to speed on the latest industry and product news is easy, but we'd also like to know what kind of new knowledge you're looking for: whether it's learning about new applications, finding new ways to use existing ones or solving problems.

It goes without saying, your involvement in *Concrete Decor* is an integral part of our success and the success we share as an industry.

If you have story ideas you would like to share with *Concrete Decor* magazine, simply write us or e-mail your comments to us at info@protradepub.com.

We look forward to hearing from you.

Sincerely,

A handwritten signature in black ink, reading "Bent O. Mikkelsen". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Bent Mikkelsen, *Publisher*

ON THE COVER: Underneath this unusual fireplace is one made of ordinary cinderblock and brick. A frame was attached to the existing structure (after measures were taken to ensure that the weight of the concrete would be supported) and Bomanite Thin-Set was intricately applied in layers upon layers and molded to create this spectacular piece, which reaches all the way to the top of the home's two-story foyer.

The project was done by Vince Schrementi, owner of Everlast Concrete, a Bomanite franchise partner in Steger, Ill. For more on Bomanite, see our profile on page 50. Visit www.concretedecor.net for visual details of the project.



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CIRCLE #125 ON READER SERVICE CARD

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Referrals from satisfied customers will propel you to the top.
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Consider This

"We're going to be losing the traditional terracottas, tans and browns which are so commonplace these days. People want more color selection. They don't want to be limited to six or eight colors. They want to see the colors that are in the magazines on their concrete floors."

— Brian Vicari

See page 14 for our profile on The Concrete Colorist.



DECORATIVE CONCRETE TIPS

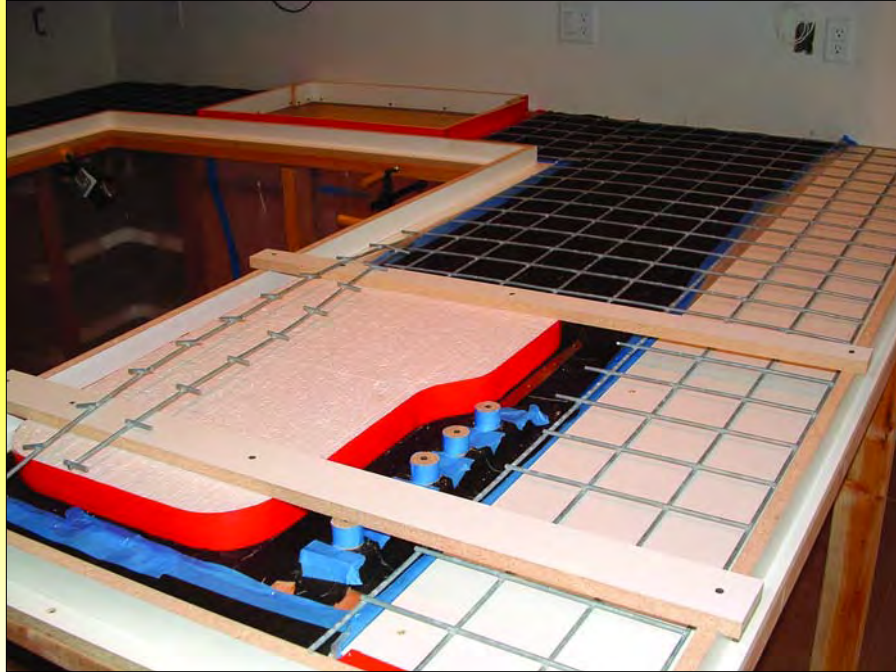
Decorative Concrete Tips is a forum for readers to exchange information about methods, tools, and tricks they've devised.

Send details to CD Tips,
Concrete Decor, P.O. Box 25210, Eugene, OR 97402.
We look forward to hearing from you!

Kitchen Considerations for Concrete Countertops

When you install concrete countertops in a kitchen, there are many details to consider in addition to the countertops themselves.

- Countertops need a flat, level and sound base to properly support them. Be sure to check the installed cabinets to make sure that they are level and flush with each other. Double check the cabinets on either side of dishwasher openings and around corners. Uneven cabinets will make installing precast countertops difficult or impossible, and uneven cabinets will make forming up cast-in-place countertops that much more difficult. If the cabinets are not level, alert the contractor right away so he can make the appropriate adjustments before your countertops go in.
- Make sure that all the plumbing fixtures will fit together in the sink cabinet. Not all sinks will fit into all sink cabinets, and some sinks don't have enough space to allow for multiple fixtures (like faucets, sprayers, soap dispensers, etc. This is a common problem, even when a kitchen designer has selected the fixtures!
- Be alert to tall faucets that sit in front of a windowsill or bar top. The overhanging sill or bar top will push the faucet forward, which may cause problems with the sink and the cabinet.



These details should be checked before you start making the countertops, saving a lot of headaches later in the process. You can even develop a checklist for these details. Both homeowners and designers will appreciate your professionalism and attention to detail.



Thanks for these tips go to Jeffrey Girard of The Concrete Countertop Institute. Girard is a licensed Professional Civil Engineer.

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Cement shortage continues

Once again this season, strong demand for cement is resulting in tight supplies in some areas of the country, according to a report released by the Portland Cement Association.

PCA's May 2005 survey of cement suppliers found that 23 states report tight supplies. "Because mortgage rates have remained near historic lows, home building continues to be very strong," says PCA chief economist Ed Sullivan in a press release from the trade group. "In addition, nonresidential and public construction is also expected to increase as the economy improves."

Last year was a record year for cement consumption in the United States, and demand so far this year is even more intense. U.S. cement consumption grew to 119.9 million metric tons in 2004, an increase of 6.8 percent over 2003. Through the first quarter of 2005, U.S. cement consumption has increased 7 percent over 2004 levels.

Cement is being imported to meet demand. Cement suppliers increased import tonnage by 17 percent to 27.5 million metric tons during 2004 and are on a pace to import 32 million tons this year. PCA predicts that imports will top 25 percent of total U.S. consumption from 2005 through 2007.

The PCA Web site can be found at www.cement.org.

Wheelabrator program extends product life

Wheelabrator PLUS Equipment Modernization Programs (EMP) help customers extend the effective life of their Wheelabrator equipment by retrofitting existing machinery with modern components.

The company offers standard and custom EMP packages that are designed to increase production capacity, accommodate a changing product mix, extend service life, improve operating efficiency and maximize wheel blast equipment potential. The overall goal is to provide customers with answers to their most urgent problems. Popular

packages include conversion and replacement of wheel assemblies, modifications and upgrades to abrasive controls, the reclaiming of systems and cabinets, and the addition of material handling systems or other upgrade packages.

For more information, visit www.wheelabratorgroup.com.

Branum, Roman move up at Brickform

Brickform-Rafco Products, a leading manufacturer of architectural decorative concrete products, has



promoted Clark Branum to the position of technical manager.

Branum has been with Brickform for a number of years as area manager for the Northwest and liaison to many Asian countries. He now oversees the entire technical department and will be reorganizing several aspects

of the company's demonstrations and educational series.

His first order of business was to promote Glen Roman to the new position of senior technical representative.

Information about Brickform can be found at www.brickform.com.

Sales and surface

International Surface Preparation, a global manufacturer and distributor of surface preparation and finishing equipment, supplies and services, has opened new distribution centers in Phoenix, Ariz., and Kansas City, Mo.

The Phoenix location serves the area stretching from Phoenix to the West Coast. The Kansas City location serves the central part of the United States. Both distribution centers offer a complete product line, plus parts and accessories, and service all equipment capabilities, including air-blasting, abrasives and tumbling media.

The Kansas City location can be reached at (800) 374-4043. To contact the Phoenix location, call (800) 899-3872. For more information about ISP, visit www.surfacepreparation.com.

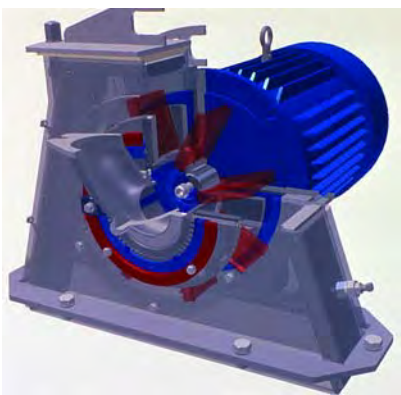


New DVD a blast to watch

Blastrac has released printed literature and a new DVD aimed at educating consumers about its surface preparation tools.

The DVD includes two video presentations: "Solutions For Concrete Surface Preparation" and "Scraping Tools and Equipment." It offers videos in both Spanish and English and provides an overview of the company's Blastrac and Sawtec brands of concrete surface preparation equipment. Machines for stripping, grinding, scarifying, shot-blasting, crack repair, joint cleanout, tuck-pointing and other tasks are shown being used to address common concrete or masonry surface preparation problems.

The Blastrac printed literature describes solutions for concrete grinding and polishing. The brochure describes the BG 250, a 10-inch surface grinder for jobs of less than 600 square feet, and the BMG 2500, a



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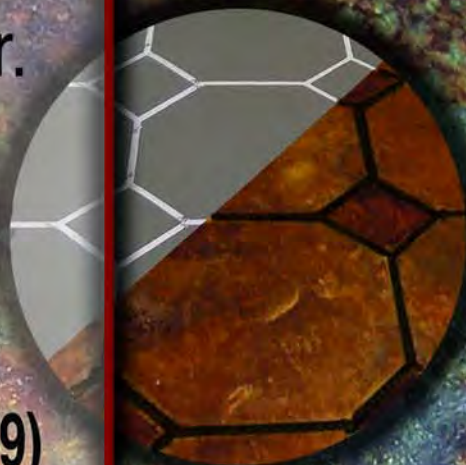
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To contact Blastrac call (800) 256-3440 or visit www.blastrac.com.

Another rep for Blastrac

Blastrac has named a new specialized distributor. Surface Preparation Equipment & Sales Inc., based in Denver, will serve Colorado, Utah, Nebraska, New Mexico and southern Idaho.

Blastrac specialized distributors are trained in the company's surface

Dear Editor,

In your June/July edition of *Concrete Decor* magazine you featured a chamfer tool on Page 6 ("Decorative Concrete Tips") submitted by one of your readers.

We are a manufacturer of steel forms, and we sell a product very similar to the chamfer tool that your reader submitted. It is slightly different in that most of the overhang on our tool rides on the form rather than on the concrete.

We sell ours alongside our median barrier and other forms, to use in situations that require a chamfered edge but where welding a chamfer to the form is not practical. The price for the tool is \$24.95.

Just wanted to let you know. Thank you.

Sincerely,

Rod Johnson, Vice President, Design Pro Inc.
(888) 728-9481, www.designproforms.com

preparation products and offer rentals, sales and support. The two new distributors will also carry Sawtec hand tools for concrete repair and surface preparation.

To contact Surface Preparation Equipment & Sales, contact (866) 620-9772. Information about Blastrac and Sawtec can be found at www.blastrac.com.

New hires at Degussa

Degussa Admixtures Inc. has hired three professionals into its Technology Innovation and Sustainability Group.

Dr. Van Bui has joined the company as Senior Scientist, responsible for overall support of engineering-related projects and expansion of technical innovation in new application technologies such as SCC and pervious concrete.

Dr. Prakash Surali was hired as Senior Project Engineer. He oversees specification efforts directed to architects and engineers and provides advanced technical service to customers. He also serves as technical consultant on marketing initiatives and planning and producing seminars.

Phil Graham is now Specification Manager (Government Approvals). He is primarily responsible for development of product and program specifications at government agencies, as well as working to expedite policy changes.

For additional information about Degussa Admixtures Inc., visit www.degussaadmixtures.com or call (800) 628-9990.

Minnesota is Rewarded

An eighth manufacturing facility has started making Reward Wall Systems insulating concrete forms (ICFs).

DiversiFoam Products, based in Rockford, Minn., has been authorized to manufacture Reward's 13-inch

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straight and 90-degree corner forms. The move increases Reward's production capacity in Minnesota, the nation's largest market for ICF construction.

To learn more about Reward, visit www.rewardwalls.com.

Acid-etch standard upgraded to include gel

A revised ASTM International standard covers gelled acid, patented by Surface Gel Tek, for the first time. The standard was revised to acknowledge that hydrochloric acid is now available in both liquid and gelled form.

ASTM International Committee D33 has approved the revision to standard D4260, which has been retitled "Practice for Liquid and Gelled Acid Etching of Concrete." The use of gelled acid is addressed in Method B of the new standard. It was not mentioned in previous versions.

ASTM standards are available at www.astm.org or by calling (610) 832-9585. For more information on gelled acid, contact Tamryn Doolan at (480) 970-4580.



Safety director hired at Cemstone

Cemstone, a leading ready-mixed concrete and aggregate company in the upper Midwest, has named Mike

Brekken safety director.

Brekken will oversee all facets of the company's safety programs, including safety training for Cemstone truck drivers and plant and office personnel. He will also be responsible for compliance with state and federal safety regulations at Cemstone facilities throughout the Midwest.

To learn more about Cemstone products and services, call (800) 642-3887 or visit www.cemstone.com.

Concrete Decor writer wins press awards

Susan M. Brimo-Cox, APR, an Ohio-based writer and frequent contributor to *Concrete Decor* magazine, won eight awards in the 2005 Communications Contest sponsored by the Pennsylvania Press Club.



One was a second-place award for a *Concrete Decor* article called "Concrete Countertops."

The PPC is the Pennsylvania affiliate of the National Federation of Press

Women. Brimo-Cox is principal owner of Brimo-Cox Communications LLC. For more about her, visit www.brimo-cox.com.





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CIRCLE #109 ON READER SERVICE CARD

Industry Spotlight

Association News

AMERICAN CONCRETE INSTITUTE New editions of popular guides

The American Concrete Institute has released new editions of two best-sellers: the third edition of "Contractor's Guide to Quality Concrete Construction" and the seventh edition of "Formwork for Concrete."

The "Contractor's Guide" is written by and for contractors and provides insight into proven construction practices. Topics include organizing for quality, concrete mix designs, specifications, foundations, formwork, preparation, reinforcement, common field problems, safety, and concrete placing and finishing. The guide can be

used as a training manual or as a basic reference for the field and office. Cost is \$34 for ACI members, \$61.50 for nonmembers.

"Formwork for Concrete" explains basic formwork design principles and provides an introduction to many common formwork practices. It is a ready reference for information on material properties, design data, and construction suggestions. The seventh edition includes new material on single-sided wall forms, insulating concrete forms, pressure formulas with coefficients for differing weights and mix chemistries, and expanded text on multistory shoring systems. Cost is \$103 for ACI members, \$171.50 for nonmembers.

The publications can be ordered from the American Concrete Institute by visiting www.concrete.org or by calling (248) 848-3800.

ACI goes to Nawlins

The American Concrete Institute will host a convention in New Orleans, Nov. 6 through Nov. 10, with the theme "Spice up your Concrete."

The convention will be the second following the Institute's yearlong centennial celebration. More than 300 meetings are planned, plus 42 technical sessions and an exhibit hall. Expected highlights include the FRPRCS-7 symposium, a mixer featuring a re-creation of a Mardi Gras parade, a Mississippi jazz dinner cruise,





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and a celebration for the 25th anniversary of ACI's certification program.

Teams of students from across the globe will compete in producing a concrete cube that achieves a target design strength of 35 MPa and a target mass of 205 grams per cube (moderately lightweight concrete). The competition is scheduled for Sunday, Nov. 6.

The convention is hosted by ACI's Louisiana Chapter. To register, visit www.concrete.org or call (248) 848-3700.

INTERNATIONAL ASSOCIATION OF CONCRETE DRILLERS AND SAWERS

CDSA director elected to international post

The International Association of Concrete Drillers and Sawers (IACDS) elected Concrete Sawing & Drilling Association (CSDA) executive director Patrick O'Brien as president at its 2005 annual meeting in Zurich, Switzerland.



Jan Lemos of Sweden and Norikazu Shibuya of Japan were elected vice presidents.

While at the meeting, O'Brien presented a proposal to have IACDS

adopt the CSDA Blade Application Code for Diamond Saw Blades CSDA-BC-107. This project was favorably received and will be reviewed pending final endorsement.

For more about CSDA, visit www.csd.org or call (727) 577-5004. For information on IACDS, visit www.iacds.org or call 41-31 858 22 20.



Technical Corner
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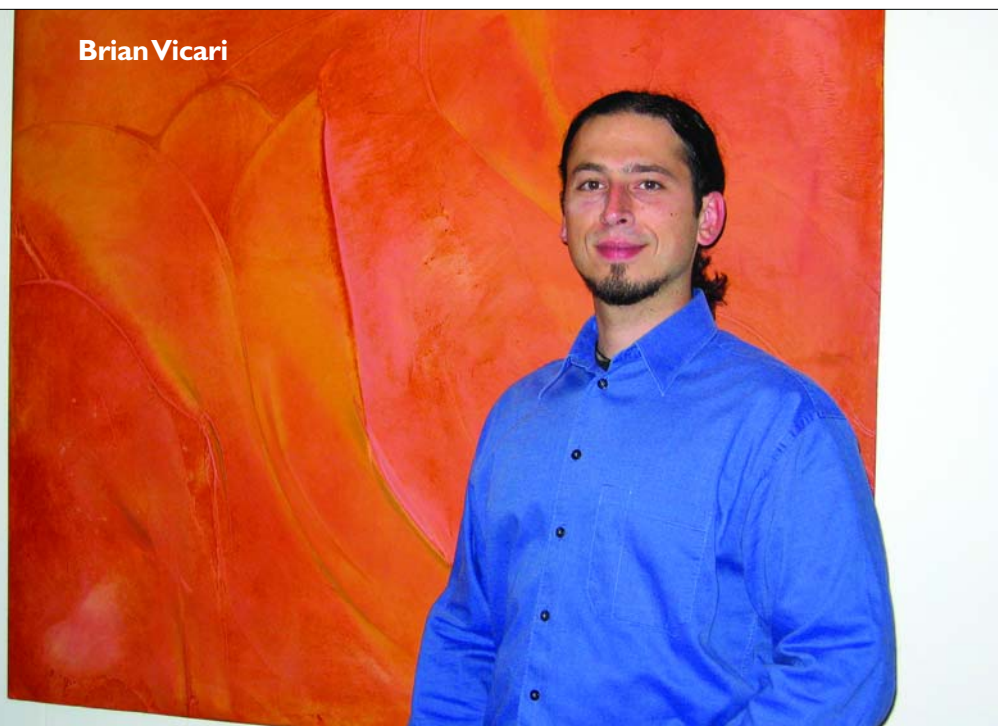
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CIRCLE #121 ON READER SERVICE CARD

The Concrete Colorist *Benicia, California*

by Stacey Enesey Klemenc

Brian Vicari



All work and no play makes for some very dull concrete, says Brian Vicari, owner of the Concrete Colorist in Benicia, Calif., about 35 miles northeast of San Francisco. Not to mention, it also usually results in an overworked, unsatisfied contractor.

"You've got to dedicate time to play with the material by yourself, with the guys and in the studio," he says. "That's an important part of the process. You've got to have time to play if you're going to be happy with your work."

Vicari says he really gets fired up about the possibilities of concrete when he's sampling and building mockups in his studio. "That's where the fun stuff happens; that's where you learn to push."

For the past five years, he's been pushing the liquid stone to create abstract concrete paintings. Initially, he says, the paintings were his own personal creative outlet, but family and friends have encouraged him to start offering his wares for sale. "Most of the paintings are done with overlays by troweling on different layers of integral colors and then using stains and dye washes," he explains. And contrary to what you may think when you see one, "It's all done with a trowel. There's no brush involved."

The paintings — which range from 2 feet by 2 feet to 4 feet by 4 feet — are made to be interior hangings. "They allow me to push what we can do with concrete in a limited area. My clients may not want this type of visual color on their floor but they can appreciate it on the wall," Vicari says. "It allows the public to see what can be done with concrete and to appreciate concrete as fine art." Because after all, concrete can be much, much more than just an ordinary floor, he adds.

Getting started

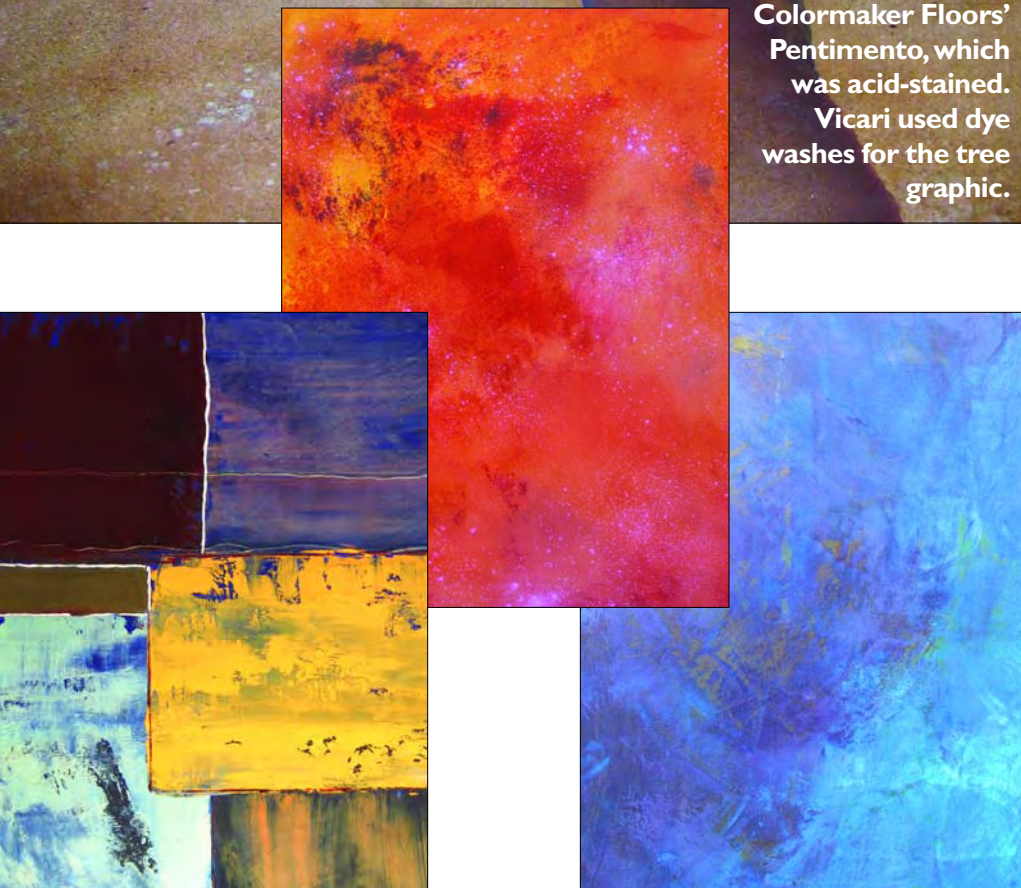
Vicari, 31, first started "playing with acid stain in a basement" right out of college, when he was running an office in Boulder, Colo., for a company that dealt with hardwood floors. Before he



The floor of this beauty shop features Colormaker Floors' Sgraffino, which was integrally colored and then acid-stained. Vicari then applied dye as an accent to create shading. He also added metallic to the sealer for a finishing touch.



Vinci's Restaurant, in Brentwood, Calif., features Colormaker Floors' Pentimento, which was acid-stained. Vicari used dye washes for the tree graphic.



knew it, he was running a few crews that stained some 230,000 square feet of concrete floors at the Palisade Mall in New York. It was there that he struck up a relationship with Gary Jones and was introduced to Colormaker Floors, a relationship that continues to flourish today.

"It was a great place to learn," Vicari remembers. Although the work consisted of the "simple basic stuff, it was then I realized that there was a lot more creativity in that field," he says.

From there, he held a short apprenticeship before going out on his own in 1997. By 1998, he was fully licensed as the owner of Custom Concrete Designs. By 2003, he was ready to incorporate and changed the name of the company to The Concrete Colorist. "The name change was so beneficial because it's much more descriptive of what we do," Vicari says. "We do no pouring of concrete. We specialize in microtoppings, acid stains and dye washes, as well as laser-cut and hand-cut stencil work."

Vicari observes that most of the building industry is leaning toward a handcrafted look again. "Everybody wants their projects to have a custom-handcrafted feel, and our graphics can fall into that category. We do a lot of visual color work."

In fact, rather than referring to his work as decorative concrete, he prefers the name "visual concrete flooring," he says. "When someone talks about decorative concrete flooring, the thing most people think about is stamp work and traditional integral color, but that's not what we're doing. We're pushing the artistic side of concrete."

In his blood

Although Vicari graduated from the University of Albany in New York with a degree in communications/public relations, he knew he wasn't going to go into that field. (That could explain the minors he also earned in business psychology, Eastern Asian religion and philosophy.) He was born into the trades, he says. Both his father and



This patio was colored entirely with multiple applications of acid stain.



The Full Plate, in Walnut Creek, Calif., features Colormaker Floors' Pentimento with integral color and a soft acid stain.

grandfather were builders; his uncles were painters, masons and hardwood flooring installers. "Going back to the trades [after college] was a natural," he says.

So, too, is transferring some of his prior knowledge into techniques that help him master concrete. For instance, he says, he uses a 220-grit screen rather than sandpaper to take the imperfections out of an architectural concrete overlayment — the same method used by most tradesmen on fine hardwood floors. "This allows uniform coverage for color," Vicari explains. "It's

like sanding but it's less aggressive and less likely to leave scratch marks. The holes in the screen allow the dust to come through instead of trapping it. You end up with a better finish."

He adds that he uses a heavier grit screen on existing concrete to open the pores before staining.

At the top of the list: samples

One of the most important avenues to success in this business, Vicari believes, is the ability to create accurate samples on site. "It's not just building a portfolio of samples for clients to choose from,

but it's being able to replicate that sample on site," he stresses. "You need to learn how chemical stains react and how dyes work so you can be consistent through your process."

The use of color and nontraditional acid stains — blending colors with dye and metallic washes — is Vicari's specialty. "We like to push our clients to be creative and not to stick with traditional colors. We know we can achieve a wide variety of colors and that they will add new life to the environment."

Once you have attractive samples, be sure they catch the public's eye, Vicari advises. He posts a multitude of project pictures on his Web site at www.theconcretecolorist.com. "It's my portfolio," he says, "and it's some of the best advertising dollars that I've spent." He says he also has CD portfolios that he mails to perspective clients.

What the future holds

The biggest change Vicari predicts for the next 10 years is a color explosion. "We're going to be losing the traditional terracottas, tans and browns which are so commonplace these days. People want more color selection. They don't want to be limited to six or eight colors. They want to see the colors that are in the magazines on their concrete floors," he says.

The polished concrete look will continue to flourish, and the use of acid stains and overlays will continue to grow as well, he says. More and more people are tearing up their carpet and hardwood floors and unifying the whole downstairs with a creative concrete floor.

"Give your clients options and continually try to push the trade," Vicari urges. "Take seminars. Be creative. It will help you enjoy what you do and that will reflect in your work. Have fun. If you don't enjoy doing what you do, you shouldn't be doing it."



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Making Molds for Precast Countertops

by Amy Johnson

Concrete is an increasingly popular material for countertops because it is versatile, durable and environmentally sound. Building molds and precasting countertops in a studio allows designer/fabricators to cast and cure slabs under controlled temperature and humidity conditions.

The mold is a critical component in the success of a precast project. "Remember, moldmaking is an ancient art and craft," says Fu-Tung Cheng, principal at Cheng Design in Berkeley, Calif. "So many things we have around us are made out of molds, and most of the molds are made of the most prosaic stuff. In the end you won't recognize the material of the original shape. Just use your imagination to invent something that is an understudy for concrete."

There are many factors involved in a successful precast countertop — the mix, coloring techniques, workmanship, creative design and more. But they all depend on the mold being right. "A good mold forms the backbone for the rest of the forming," Girard says.

Choosing your material

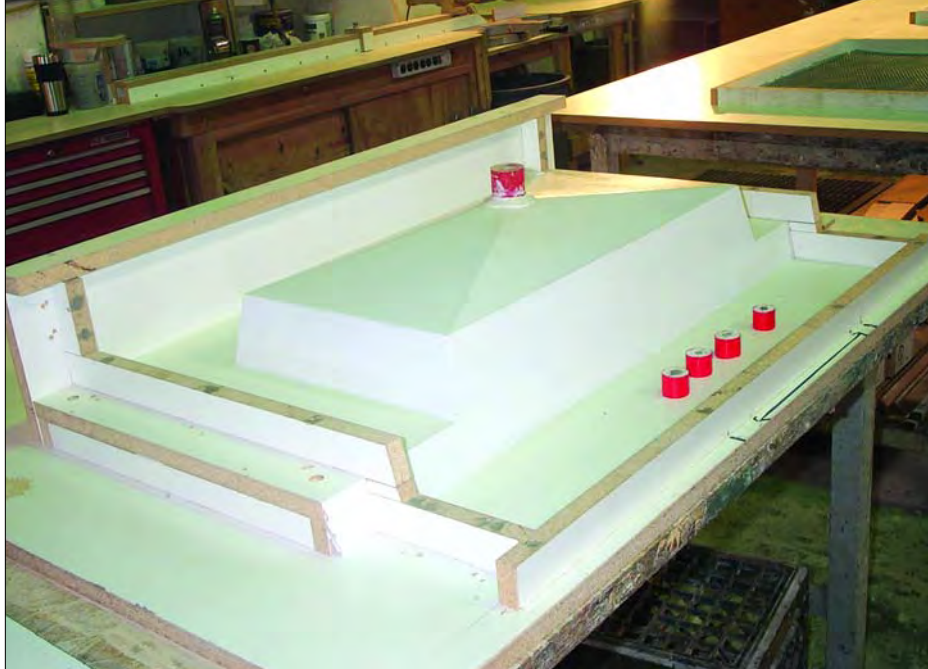
While melamine is probably the most widely used material for making molds, contractors actually use a surprising variety of materials. Here are some questions to ask when choosing a material.

First, is it strong? Can it withstand the pressure of the concrete without distorting? Strength and rigidity are some of the advantages of melamine. If a less-traditional mold material is going to be used, it must be properly supported. "The most important factor is that whatever you're casting on has to be flat and rigid," says Jeff Girard of The Concrete Countertop Institute in Raleigh, N.C. "The weight of the concrete will cause a suspended form to sag." If your shop is producing countertops regularly, he recommends investing in a dedicated casting table.

Second, what is the desired finished look? Concrete will mirror the surface it is cast against, so if the slab will be used with little finishing, the mold should



Photographs courtesy of Cheng Design



imprint the desired surface (usually very smooth). If the counter will be ground and polished, other considerations, such as economy and reusability, become more important in choosing a mold material. Buddy Rhodes of the Buddy Rhodes Studio in San Francisco often casts “right-side-up” so the molded surface will be the bottom of the counter, finishing the top by hand troweling for a hand-crafted, burnished look similar to a cast-in-place counter.

In any case, it is important that the mold release easily from the green concrete without ripping the surface.

Third, is the mold material affordable and ecologically sound? Almost every expert interviewed for this article cited “green” reasons for choosing the mold material they use. They look for molds that can be reused or materials that can afterwards be used for something else.

Pros and cons

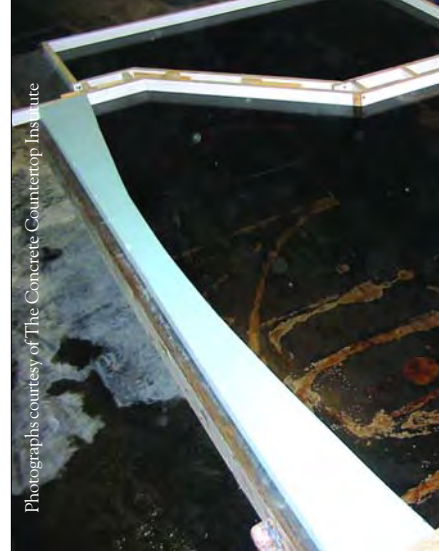
Wood: Wood is the easiest material to tool, cut and assemble. It is also relatively inexpensive. The drawback is that the wood grain is mirrored in the finished slab.

Melamine: Melamine is particleboard faced with a plastic laminate. It releases more easily than wood and does not telegraph the grain. Michael Dahl, of Michael Dahl Concrete Designs, likes melamine because the molds release easily. When Buddy Rhodes uses melamine, he uses each side of the board one or two times and then cuts it down to use as crates so the material is not wasted.

Melamine does have a slight texture, so the finished product might need light polishing, according to Michael Karmody of Stone Soup Concrete in Northampton, Mass. “The texture of melamine gives a place for the finest particulates to settle in.”

Brandon Gore, of the Gore Design Company, Tempe, Ariz., cautions that melamine can torque when the mold is screwed together, resulting in “waves” in a long span. Even so, fabricators who use other materials to cast slabs often





Photographs courtesy of The Concrete Countertop Institute

use melamine for smaller details because it is easier to cut and tool.

Rigid insulation foam: This material is most often used for corners and knock-outs because it is easily shaped. The edges of the foam need to be sealed to prevent adhesion to the concrete. Dahl recommends sealing with a silicone or epoxy resin. Cheng lines the edges with a soft foam rubber taped with packing tape. (He cautions that the tape must be smooth to avoid causing wrinkles in

the concrete.) Girard leaves the foam unsealed because he grinds the concrete to finish it, so any foam residue is removed in the process. Foam is soft enough to accommodate expansion and contraction of the concrete so it is easy to remove after cure.

Formica, Mylar and glass : These materials give an exceptionally smooth result. Rhodes prefers Formica to melamine because it is denser and lasts longer. One drawback of Formica and

plastic sheeting is they must first be adhered to a stronger board for support.

Steel: Jeff Girard is an advocate for steel molds. "Steel is infinitely reusable," he says. "I have some molds five years old and I expect I could get 15 more years out of them." Steel has other appealing attributes as well. "It comes in standard sizes so there is little work cutting it to size," he says. "It is straight and smooth and forms good right angles." Release agents make steel forms easy to release

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and they contain a corrosion retarder so the molds are unaffected by moisture. Steel does not give as smooth a finish as some of the other materials listed, so it may not be suitable for certain designs. Girard's technique is to fill air holes with a compatibly

colored material and then grind and polish the surface.

Rubber: Polyurethane or neoprene rubber is used to create molds for sinks and other three-dimensional shapes. Cheng uses found objects like a light fixture as the basis for creating a rubber mold for a smooth, round sink. "The last thing you want to do is make it from scratch," he says.

Rhodes sometimes uses sinks found at yard sales or architectural salvage companies. He takes a mold of the sink, uses it to make a plaster cast and then creates a fiberglass mold that can be used hundreds of times. He says he prefers fiberglass to rubber because rubber is soft and can distort under the weight of concrete.

Using caulk

Concrete poured into a mold with right angles will come out with a sharp edge. Caulk tooled into the angles softens that edge. Karmody says this is important because the particles that make up concrete begin to segregate at a corner that is too sharp for the larger ones to fit in. This means the concrete at the corner is weaker and more vulnerable to breaking. Formliners or rubber molds can also be used to create a round or textured corner.

Most recommend 100 percent silicone caulk. Silicone adheres well to the mold but releases easily from the concrete. Acrylic caulk can leave a residue that will discolor concrete the

next time the mold is used. If water cleanup is desired, latex caulk can be used.

Caulk also keeps molds watertight and prevents concrete from seeping through seams. However, most experts interviewed for this article use a stiff, dry concrete mix. "Bleed water is a symptom of segregation, which means a less than optimal mix," Girard says. "If you need a watertight form, you have other problems."

Caulk is often used to adhere objects to the bottom of the mold so they will be embedded in the top of the counter when it is turned over. Dahl puts a drop of silicone caulk on the mold, uses a straight edge to draw it out, and then scrapes it off to a thin layer. The caulk keeps the object in place while the concrete is poured and prevents concrete from seeping over the object.

Some use additional mechanical fasteners to keep the object in place.



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Gore attaches a piece of wire mesh to the back of the object to act as an anchor so that it won't pop out when the mold is removed or loosen later as the concrete expands and contracts.

Rhodes uses rubber cement instead of silicone caulk to adhere embedded objects to melamine. He says, "(The adhesive) can't be so strong that it pulls the object out when the mold is removed, but it can't be so weak that it

allows concrete to seep around the edges." Rhodes also attaches screws to the object so the screw heads act as an anchor.

If the embedded object is a flat, regular shape, like a ceramic tile, Karmody prefers to attach it after the slab is cured. He uses the mold to leave a void, using foam insulation or plywood covered in plastic — "anything that doesn't pull moisture

from the concrete." When the slab is finished he uses grout to attach the tile and make the transition between the object and the concrete around it.

Tips from the experts

The artisans who contributed to this article came to concrete countertops down a spectacular variety of paths. One started in the industry building concrete skateparks. Another was an engineer who still has an eye for structure. A third was an artist who discovered concrete during his search for the ideal sculpting medium. From this rich background come some nuggets of wisdom, things that might help you avoid costly mistakes. Here is a sampling:


Don't be afraid of mistakes. "Unless you've done it 500 times the key lessons aren't going to sink in," says Michael Karmody. He recommends making 2-foot-square samples. This is enough concrete to test the mix design and see how it will react in a full-scale pour while giving the customer an accurate picture of the finished product. Buddy Rhodes offers a corollary: "Experiment in your shop, not in someone's kitchen."

"Don't bite off more than you can pour." Fu-Tung Cheng recommends starting out on small projects. Larger ones can get away from an inexperienced fabricator.

"Use the right mix for the job." Michael Dahl stresses controlling the water-to-cement ratio to avoid weak countertops and cracking. Most of these experts use a dry mix to avoid seepage and excess bleed water. Tom Ralston stresses using well-graded aggregate. "I always use angular aggregate because it can lock itself together, where round can't." He sometimes uses a shrink-reducing admixture such as Eclipse from Grace Construction Products or Tetraguard from Master Builders.

Double-check everything. "The smallest mistake in the field will prove agonizing in the end," says Brandon

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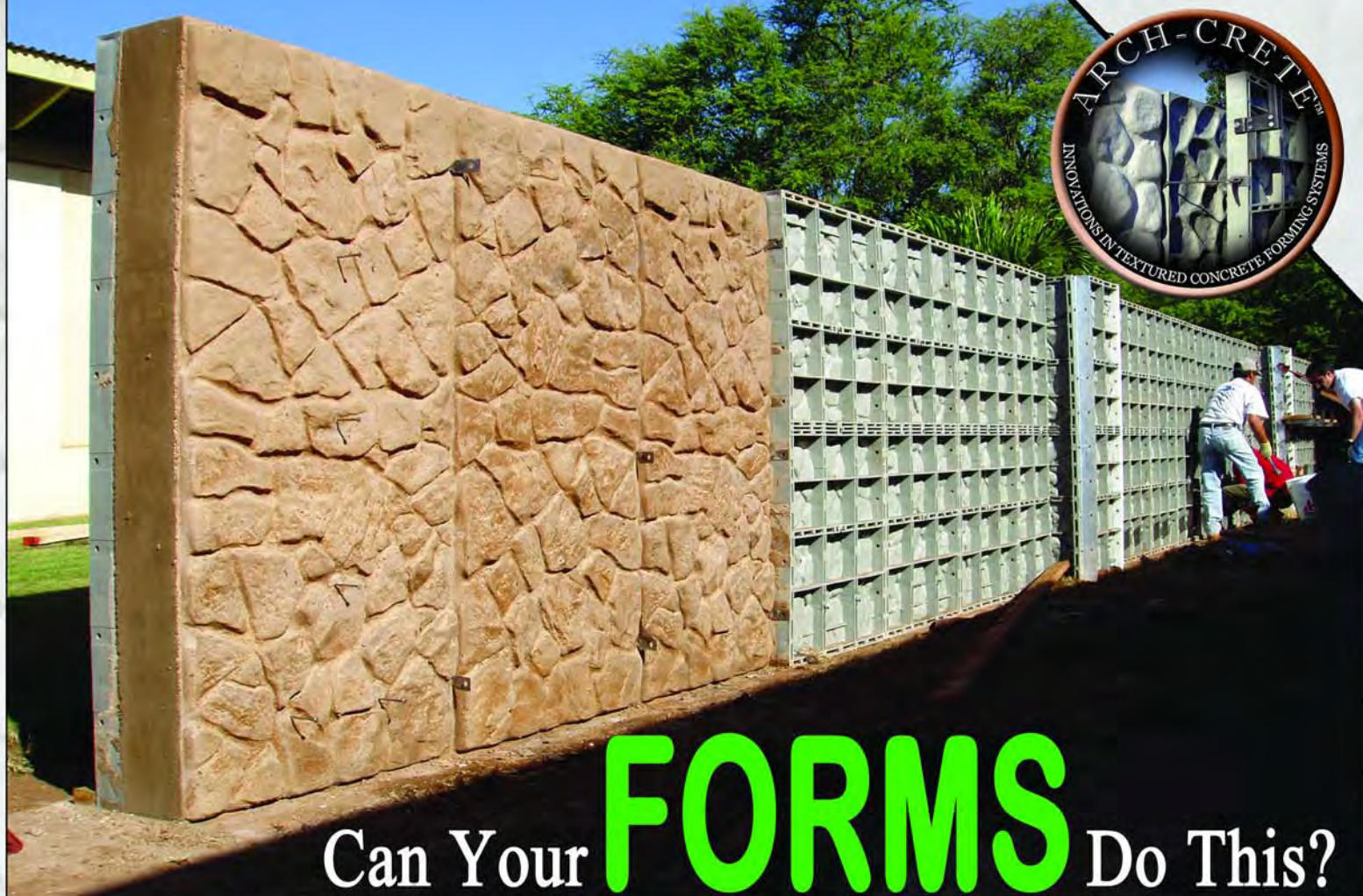
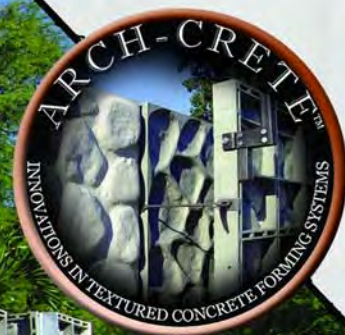
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Gore. He cites the story of an employee who trimmed three sides of a template in the field but missed the fourth side. The result? A slab ten inches too long.

Label templates carefully. Everyone agrees on the importance of remembering to turn the template upside down so when the precast is turned right side up the sink will be in

the right place. Gore specifically recommends avoiding mix-ups by labeling templates carefully to identify which job they belong to.

You want your countertop to be perfect and beautiful, but you still have to keep your business in the black. "Don't sacrifice quality, but keep

the bottom line in mind," says Jeff Girard.

All the experts agree on one piece of advice: get all the training and practice you can. "Study what's out there and then make up your own mind," Karmody says.





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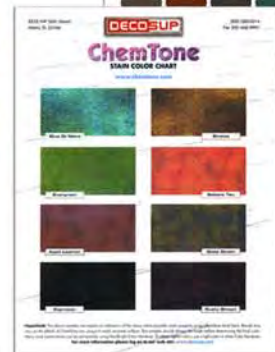
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Experts figured Wes Vollmer was ready to climb the walls when he told them what he wanted to do with a microtop overlay. "They thought I was crazy," says the owner of Alternative Finishes in San Antonio, Texas.

But for Vollmer, who was looking for an innovative application, the question was simple. "If it was tough enough to hold up on floors, why won't it hold up on walls?" When the mix manufacturer could not think of a reason, Vollmer went vertical.

Vollmer is one of a growing number of decorative concrete craftsmen who are using vertical overlays in highly decorative interior and exterior applications. Many of the jobs are in commercial buildings, such as resorts, hotels or upscale restaurants, where clients need the look of an expensive custom home, but with washable surfaces that are as tough as concrete.

Designs are unlimited. By stamping or carving, contractors can create geometric patterns, complicated forest scenes and even faux dinosaur fossils. A huge range of colors is available using integrals or acid stains.

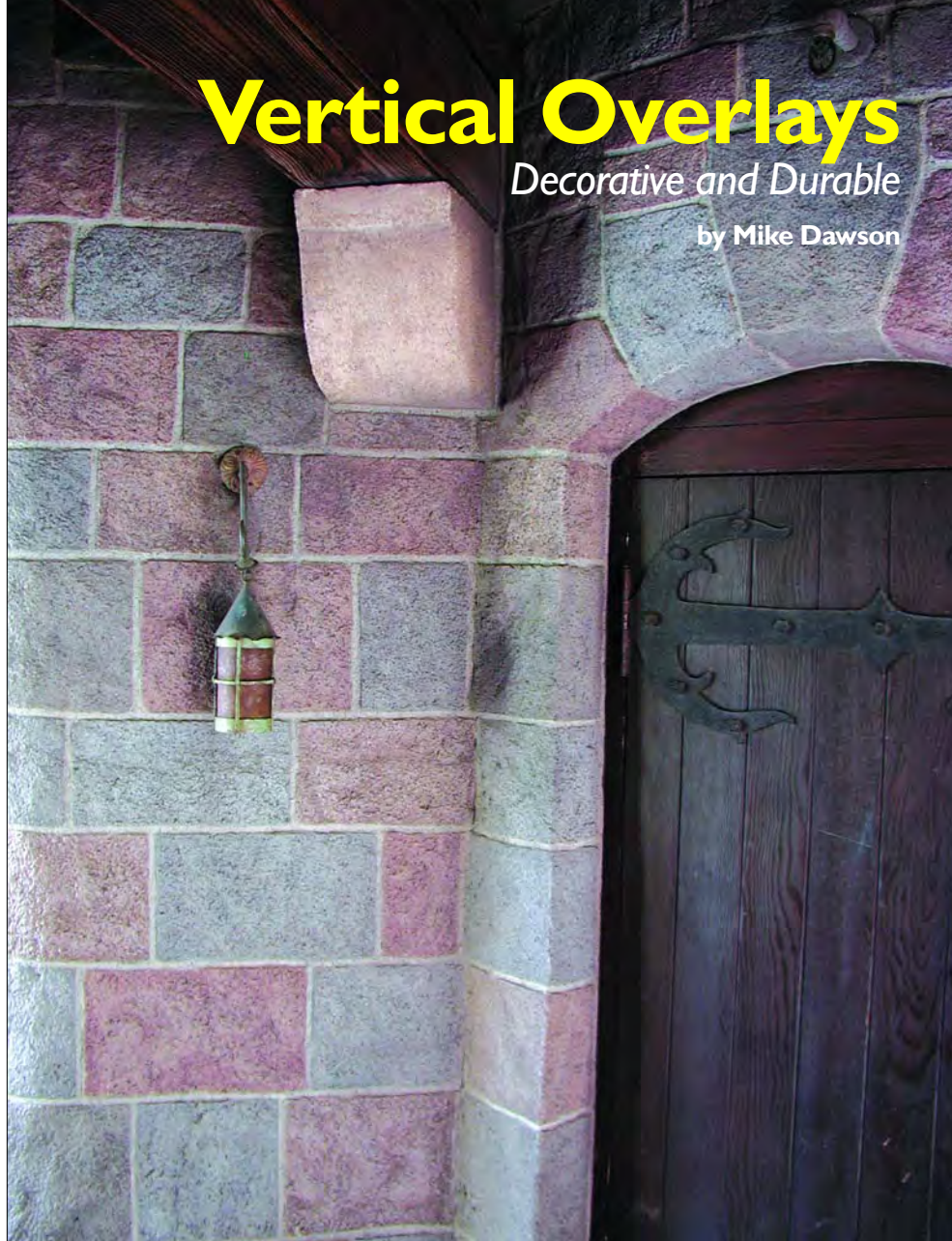
If you're in the decorative concrete business, you already know the possibilities of design. The bigger questions lie beneath the surface, and one reason that vertical overlays have been successful is their versatility when it comes to substrates. "I haven't seen anything I can't go over yet," Vollmer says. Substrates that take well to microtoppings include plywood, OSB, and sheetrock, the most common wall material encountered on interior jobs.

Experienced floor overlay installers will find new challenges in vertical work, and they need to be prepared. "He's going to have gravity that he isn't used to come up and bite him," Vollmer says. Gravity is the key difference. There is obviously no self-leveling in a vertical application, but there are door frames, windows and counters to work around. Therefore, there is a difference in the mental approach, the preparation of the substrate and the mixture.

Vertical Overlays

Decorative and Durable

by Mike Dawson



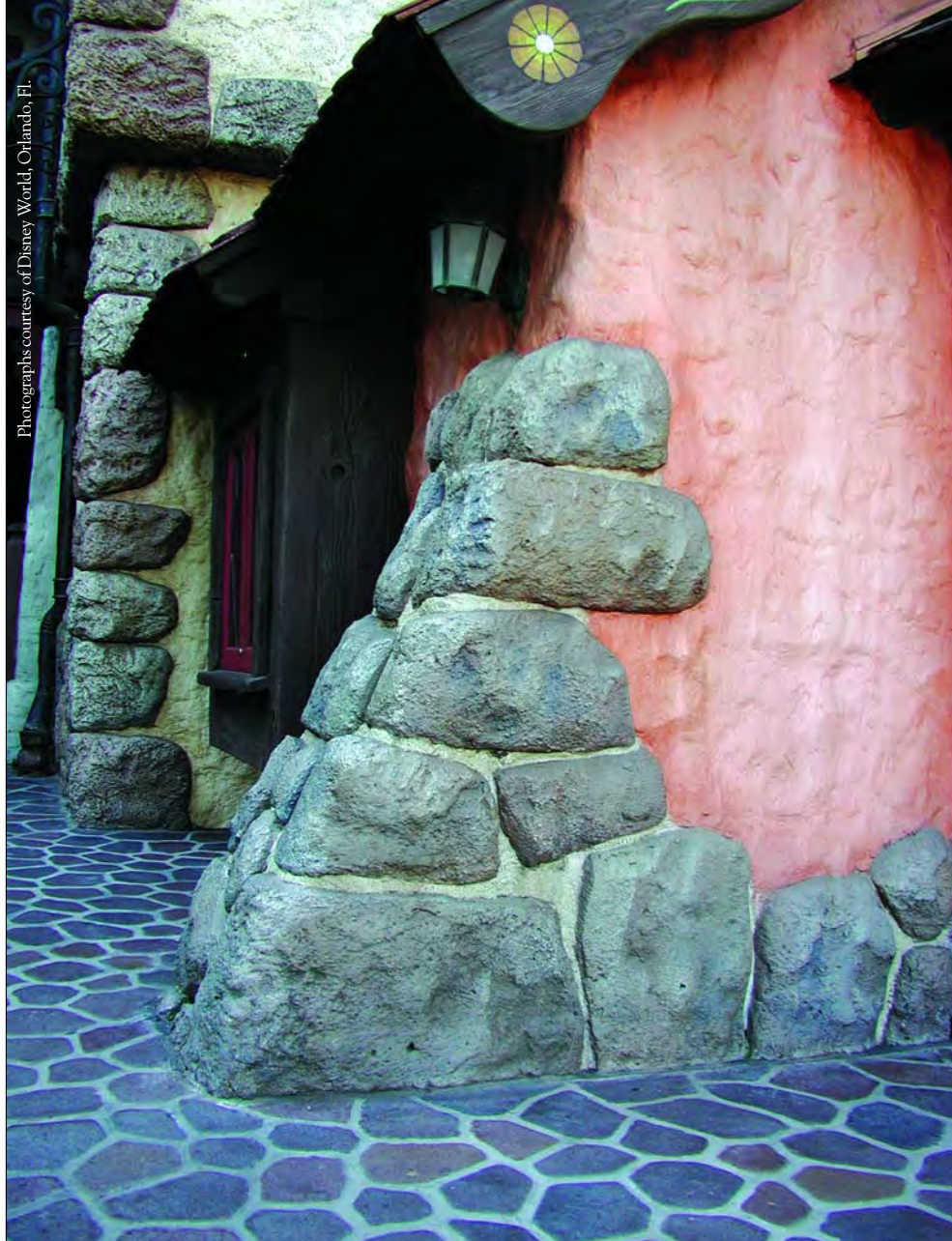
Prepping and mixing

One of the first considerations is the size of the job. For example, an installer facing a large surface area may use a sprayer to shoot material from a hopper while a trowel crew follows behind smoothing it. For smaller areas, applying by hand may be preferable.

Most experienced installers prepare the substrate with some kind of a base coat, a "liquid sandpaper" made of repair mortar, or some other bonding agent. When working with wood or drywall, Vollmer recommends first installing a wire mesh, then the scratch coat, followed by the microtop coat.

Polypropylene or fiberglass mesh nets are commonly used to bridge gaps or cover seams. Expanded diamond metal lath is another commonly-used reinforcing mechanism, especially for wood substrates, which are highly subject to movement. Lath is also used when a holding mechanism is called for with some thicker overlays. Or the wall can be recovered with cement board to make a more durable surface. Some contractors use Glass Fiber Reinforced Concrete (GFRC) to boost a vertical overlay's durability.

Some exterior applications require more prep. For example, Fossilcrete of



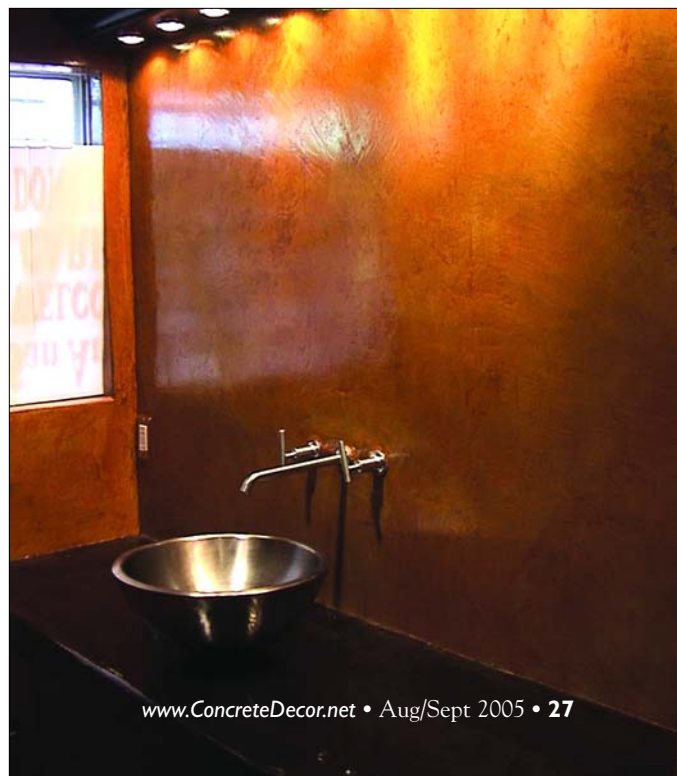
Oklahoma City offers an overlay system for metal buildings. The company recommends a lath-and-wire stucco mesh frame be fastened to the building first to ensure long-term stability.

The other divergence from floor applications is in the mix. While products like Flex-C-Ment Wall Mix, manufactured by Yoder & Sons, and Fossilcrete's Vertical Mix are designed for vertical overlay, products like Miracote's MPC Microtopping can be used either horizontally or vertically. Vollmer uses Miracote's microtopping in a slightly thicker mix than would be used for floors, but with a thinner application. He advises the beginner to mix small batches, and make very slight changes, changing the amount of water by just an ounce or two at a time.

Training, as always, is key

As pleasantly workable as these mixes are on an even surface like drywall, all the rules of overlay apply. There are no shortcuts, says Raymond Bennett of Flex-C-Ment. Overlays tend to look pretty easy, especially at the hands of an experienced craftsman. But "don't try it without training," Bennett says.

That is why Yoder & Sons offers a three-day certification program. This certification gives the installer some proof of his skills when marketing





himself and the Flex-C-Ment overlay system. Bennett also supports an idea that many in the business would like to see take form: an industry-wide training and apprenticeship program.

Besides getting training in overlays, Bennett says, it's good to know a veteran stonemason and a tile installer in your area. Even though they are your competition, they're also full of tips on creating a decorative exterior wall or a kitchen backsplash.

Hopefully they won't hold it against the decorative concrete installer that he

has all the competitive advantages. Vertical overlay mixes are far more cost-effective than tile or various stone or brick applications, in both time and materials. Not only is concrete less expensive, there is a far greater range of design and color possibilities due to the very workable nature of microtopping mixes, which has led to unlimited artistic and architectural design potential. "It has opened up even our eyes," Bennett says.

Samples are essential

The wide array of designs is why samples make good marketing tools. Vollmer said he uses large panels, 5-feet square, to help clients visualize how the finished work would appear on their property. A one-foot sample is not large enough to make the point, he says, nor is it large enough to include flaws. And of course, even the best work will have a few flaws. "I like to point out the inconsistencies up front so there are no surprises," Vollmer says.

Stan Pace, a concrete artisan and paleontology buff who turned his skills



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and passions into the company Fossilcrete, created his own formula to sell with his stamps and overlay systems. His Vertical Mix is designed to take deep impressions and reveal fine details from his stamps, which include an array of genuine impressions of dinosaur fossils, animal tracks and plants, along with stone wall impressions from faraway places such as China.

Pace, who started as a contractor creating boulders, walls and fountains in Florida before moving to Oklahoma City, is probably the only American decorative concrete artist who has traveled to China on to take an impression off the famed Great Wall. That stamp has been unveiled, but has not yet been offered for sale on the company's Web site.



For a more detailed look at vertical overlay applications, see the Feb./March 2004 issue of Concrete Decor (Vol. 4, No. 1). You can find it online at www.concretedecor.net.

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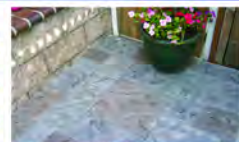
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CIRCLE #05 ON READER SERVICE CARD

Densifiers

Moisture management... and a whole lot more

by Susan Brimo-Cox

In a perfect world, moisture intrusion wouldn't be a problem for any concrete floor. Unfortunately, even when all the proper steps are taken before the concrete is poured, moisture issues can come up. If moisture is the only challenge you're facing, there are many products you can choose to combat it, such as topical sealers and crystalline waterproofing products. But if you're trying to achieve multiple objectives — including moisture management — with just one product, a densifier may be just the thing you're looking for.

When talking about densifiers, it is important to be clear about what a

densifier is, and what it is not. It is not a moisture-proofer or a waterproofer or a water repellent.

Steve Erickson, president of DynaCrete USA, reports that waterproofing materials are often confused with densifiers. They are also confused with wear coats, he adds.

Rather than being products that plug off the naturally occurring capillaries in the surface of concrete, densifiers penetrate and become part of the concrete matrix. They are more than a membrane or topical sealer.

As Phil Smith, vice president and technical director of L&M Construction Chemicals Inc., explains, 15 percent to

20 percent of portland cement forms calcium hydroxide as a by-product of the hydration process. This by-product is soft and does not contribute to the structural integrity of the concrete, so the idea behind densifiers "is to take this material that has no structural value and marry it to a chemical substance that can convert it into a material that has structural value."

Densifiers penetrate into concrete, then chemically react with the calcium hydroxide within the surface of the concrete. This chemical interaction creates yet another by-product that fills and closes the pores in the concrete, thereby producing a denser surface.

It's this reduced porosity in the concrete that slows moisture penetration, says Jim Sist, president of ChemTec International Inc. It also does much more, but we'll get to that shortly.

Erickson observes that the chemical reaction stimulated by densifiers will stop only if the densifier runs out of alkali (calcium hydroxide) or if the job is complete. Or, the densifier may run out before you reach the desired penetration.

Other beneficial characteristics of densifiers

Densifiers have many more benefits than simply decreasing moisture penetration: They increase abrasion resistance, stop wear and dusting, and generally have a high resistance to acidic materials such as salts, solvents



Photographs courtesy of ChemTec, Inc.



New product spotlight: SS ColorSystem

For many years, customers have been asking SealSource LLC for a densifier with color. As company CEO Kym Nelson reports, they may be the first company to offer a densifier that includes coloring pigments: SS ColorSystem, a penetrating, chemical densifier available in a wide range of colors.

Nelson explains it is a colloidal silicate-based product. "We went with this structure for the deeper penetration. The color molecules are larger, so you want the hardener molecules to take the pigment as deep as possible — it was the perfect carrier."

She describes SS ColorSystem as having much more vibrant and consistent color than acid stains, and as being easier to apply. It also provides more consistent color than integrally colored concrete, and is more economical.

Unlike clear densifier, Nelson says you need to wait 28 days to use the colored densifier — you want more of the free water to have hydrated out of the concrete before application. But, she says, most companies will wait, making time for the unique benefits.

SS ColorSystem cures overnight, so downtime is minimal for application. And the colors are UV stable, so the product is good indoors and out.

Penetration of the color pigment averages $\frac{1}{8}$ inch. The hardener penetrates, on average, to the same depth or deeper. The system is water-based and environmentally friendly.

For more information, visit the company's Web site at www.sealsource.com.

and mild acids. "They do protect the cementitious property of the concrete and maintain a high pH for a prolonged period, thereby extending the useful life of the structure," Sist says.

Other industry experts agree that densifiers produce many beneficial characteristics for concrete surfaces.

Erickson reports densifiers can dramatically increase the compressive strength of concrete — "especially the older it gets" — and also improve tensile strength.

The change in the molecular structure of the concrete is permanent. This has great appeal for large retail and industrial applications because denser, abrasion-resistant concrete is easy to maintain and has such a long life. If maintained properly — i.e., cleaned regularly — densified concrete should last decades.

Even in residential applications such as driveways and patios, densifiers have their advantages. For example, they help prolong concrete's life when placed in freeze-thaw environments because they provide moisture control and resistance to salts and chemicals.

It's important to understand, though, that densifiers do not create an impermeable surface. While densifiers block larger moisture molecules, they do breathe, allowing smaller air molecules to pass.

Densifiers are easy to apply

Densifiers work on new and old concrete, and they are easy to apply. Most often they are applied with a sprayer. Some product manufacturers recommend that the densifier be worked into the surface, with either a squeegee or a broom.

New concrete does not require any special preparation. Existing concrete should be cleaned and stripped of old coatings, such as sealers or paint.

Instructions for the use of different densifiers, including specific temperature and environmental parameters, can always be found on a product's label and should be read and understood before application.



Photographs courtesy of SealSource



When is the best time to apply a densifier? Recommendations vary among manufacturers.

Erickson says to spray densifier on the concrete "as soon as you can walk on it or you pull the frames from the wall."

Sist, also, recommends that densifiers be applied after the concrete has been placed and is hard enough to walk on without marking, or anytime after.

On the other hand, Smith suggests waiting. "We want to wait until the concrete has some age to it; at least four to seven days." He explains that as hydration of the concrete continues, calcium hydroxide continues to be created. So, if you wait, there will be more calcium hydroxide for the chemical reaction. In addition, if you apply the densifier too soon, many of the pores in the concrete will still be filled with free water, limiting the empty capillaries available for the densifier to work into. In normal conditions, by day seven, concrete hydration is about 60 percent to 65 percent complete.

Contractor's troubleshooting tip: Calcium carbonate spots under sealed concrete

As new concrete hydrates, it creates calcium hydroxide. When the calcium hydroxide comes in contact with carbon dioxide in the air, it creates calcium carbonate (free salts). These salts wick water, creating wet spots on the surface of the concrete. This causes white spots to appear under a sealer.

This problem often occurs because the sealer is applied too soon, or there could be a moisture problem under the slab. Unfortunately, re-emulsifying the sealer won't fix the problem because the salt remains and the problem will recur.

The correct course of action is to strip the sealer and use an efflorescence remover (or similar product) to remove the salt deposits. Allow the substrate to dry thoroughly, and then reseal the concrete.

Source: Clark Brantum, technical director at Brickform Products

Fortunately, densifiers do not require much downtime. Sist says you can use the surface as soon as the treatment is installed and has dried, usually several hours.

Nonetheless, the chemical reaction of the densifier and the calcium hydroxide continues for some time. Erickson reports the chemical process may continue for six months to a year. And the more densifier that goes

through the chemical process, the denser and harder the surface.

Densifiers and decorative concrete

Depending on whom you talk to, you may get a different response regarding how densifiers work with decorative concrete, so it may be best to do a test first in an inconspicuous location.

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A densifier may see pigment in integrally colored concrete as a contaminant, Erickson says, and try to push it to the surface, creating a splotchy effect.

Sist, on the other hand, reports that densifiers generally work well with integrally colored concrete. It's acid stains you might have a problem with, he says. And he cautions, "If you use a densifier over an acid-stained slab, make sure you know to prep the concrete or you will ruin the stain."

Erickson agrees that using densifiers with acid stains is tricky. "You may get some weird colors and results."

With water-based stains, Smith recommends putting the stain down first, then densifying.

There generally are no problems in applying a densifier and then a cementitious topping, but experts vary on why you should or should not. Erickson suggests a densifier will "even out the substrate's porosity" and enhance bonding. Smith observes that densifiers are designed to be used on wear surfaces and may eliminate the tooth of the surface.

Choosing a densifier

Sist points out that densifier manufacturers generally use sodium, potassium or lithium silicate as a base for their densifiers, and that they basically all work the same way. But each manufacturer has its own proprietary chemical blends, and there are a lot of variants among manufacturers and a lot of variants in performance.

That's why it's important, says Erickson, that a contractor understands what characteristics are required for the finished concrete. Knowing the specifications for each project will help you make a prudent choice in densifier product.

"Make sure that the manufacturer can supply you with lab testing backing up its claims of performance certified by a testing laboratory or engineering firm," Sist says. "This will give [you] a sound basis to make [a] decision."

ASTM standards are the most widely recognized, but other organizations — such as ACI and ASCE, even state departments of transportation — also have some standards or criteria for such products. For densifiers, testing parameters include abrasion resistance, depth of penetration, compressive strength, tensile strength, chloride ingress, permeability, water penetration, and the like.

Not all organizations test for all characteristics, and standards vary, of course. What you are more likely to encounter is a project description that includes required standards specified by the project architect, engineer or consultant. Find a densifier that meets the specified criteria and you should be good to go.



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CIRCLE #49 ON READER SERVICE CARD

Art in Public Spaces

Many public building projects have money set aside for art. Why not make it decorative concrete?

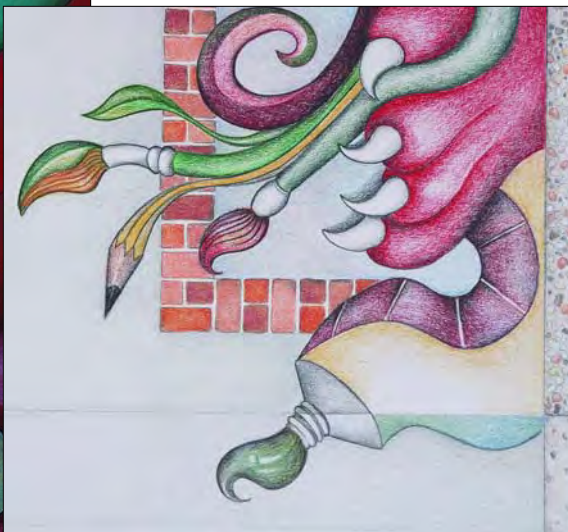
by Steven Ochs

Images in Concrete does a lot of work for individual customers, both in creating original floor murals and in basic staining. But we also work with businesses and schools via grants to produce public art. Many states have “Percent for Art” or “Art in Public Places” programs where ½ percent to 1 percent of building costs for publicly funded buildings must be set aside for art.

I would encourage concrete contractors to seek out the artists in their communities. These may be people who are graphic designers, painters, or — like me — an art professor. If you find compatibility and team up, the design skills of the artist can elevate your decorative concrete to a whole other level. Public art can be so much more than hanging a painting on a wall. In my opinion, the most successful examples are when art is integrated with architecture, so what better foundation could you have for success than concrete floors? The only difference in working with individual clients and community art leagues is that public art requires many more people, more meetings, more research, more patience, and a lot more time.

Time consuming? Absolutely, and your fee for this type of service must reflect the time you spend doing research and planning as well as the square footage you will install. Gerald and I discovered that the deciding factor isn’t always the money. This is as true for our clients as it is for us. It is whether they appreciate the uniqueness of seeing their own ideas manifested beneath their feet and how art can express values and engage people in dialogue. If the design works well, the funds will follow.

For some contractors, having clients actively involved may sound like your worst nightmare. Some may think we are crazy for inviting our clients to work alongside us. For us, the closer we work with the client, the easier it is to make changes during the process. What! Who would do such a thing? Me. No matter how many hours or days it took for the ideas to evolve into a good design, there is always that opportunity to make it better. It may be after a good night’s sleep or during the process of laying out the image: New ideas can and will occur. If I strongly believe the change would strengthen the work, it would be a disservice not to run it past the client.



As an artist/educator for over 23 years, I don't recommend public art as a venue for just anyone. Whether you are a contractor or an artist, you must truly believe in the creative process via committee and have an honest respect for all those involved. If you see it only as "loops to jump through" in order to get your work out there, then you are in the wrong field. Secondly, you can't have much of an ego, if any. When I serve as a public artist, I see my job only as the facilitator that merges ideas into images that express the intentions of the people who live, work, and play in this environment. Hopefully, the people in that community will proudly say, "This is ours," and it will reflect who they are as well.

A workshop in site-specific team design

Recently, the art teachers from the Magnolia Public Schools in south Arkansas asked me to conduct a workshop in decorative concrete. As you know, most schools have an abundance of concrete, and after they thumbed through a few magazines and got a glimpse that there is more to life than grey, they were immediately on an aesthetic mission.

Our design team consisted of three art teachers, an applied arts/drafting instructor, and the high school principal.

Here are the steps we took:

1. Research the environment. Measure, record, and make note of anything and everything in the chosen site. Sketch and/or take photos of surrounding design elements that may be incorporated later on. We don't know how much of this will be used, but you can't take too many measurements. The details you find in most environments don't appear to be cohesive. Through design, you can pull all of this together. When the job is finished, it fits, it makes sense, and it feels right to most people even if they don't know why. Most of the designing I do is miles away from the site so these pages of sketches and numbers will save you mileage and time in the long run.

2. Make scaled drawings. With the help of the drafting teacher, scaled drawings were made of the site, including

architectural structures. Copies were made and distributed among each member of the team.

3. Purpose for the design. Most people only desire what they have seen before, but since our goal is to create original pieces, copies were not an option. Not only does this avoid copyright issues, it assures our clients that they are getting something special with a real sense of ownership. I posed these questions to the group: what do you wish to communicate and what do you want your students and outside guests to understand when visiting this space? How do you want this design to function? Will it represent the creative skills taught within this room or will it set the stage for a desired attitude even before they enter? Decorative? Yes, but we want more than decoration; the design must express meaning.

4. Creative process. It is important to be very observant and listen carefully to every member. Of course everyone has opinions, but many who are unfamiliar with this approach are unsure or timid about expressing them. In team designing, as with the individual creative process, you are not striving for the best solution at this time. You are looking for as many possibilities as the mind can generate. If you become negative and begin editing out "what you can't do," nothing new will evolve. Editing is a very important stage, but it comes later. Even the most bizarre, off-the-wall comments from one member can evoke new ideas, conjure up lost memories and help others redefine their goals and bring the images closer to focus. When each member understands that their point of view is crucial to the dynamics of this process, they begin to relax, have fun, and allow their brains to play.

5. Individual designs. Each member was allotted a few minutes to work individually to develop concept sketches

onto the scaled drawings of the site. When finished, each one presented his or her ideas and explained where the designs came from and how they evolved.

6. Edit and team design. The group chose what they felt were the best elements from each of the concept sketches and together, we composed the final black-and-white draft. More copies were made of the draft and colored pencils were handed out for some of the members to work on color schemes.

7. Slab prep and wrapping it up. The rest of the group was assigned to scrape off gum and prepare the slab with a degreaser, an acid etch and a neutralizer. Others worked to develop and label a Smith's Color Floor chart on grey matte board. The products from each stage of the workshop were collected and arranged onto presentation boards and photographed.

8. Presentation for approval. Now they had to sell this idea to the superintendent. When you can illustrate to a client your thought process and how the final design evolved, you are much likely to get approval. Some of the rationales, or tactics for preparing for this presentation were: "The success of this project and its documentation could lead to future grants to fund more concrete art on campus. The publicity generated by this design will inspire local sponsors to become active in the beautification of our campus."

The superintendent approved it.

9. Design transferred to slab. The high school students took the drawing, placed grid lines over it and transferred it to the slab. This is where designing to a scaled format really pays off; there are no surprises. A couple of the students made minor changes and informed us of the "improvements."

10. Engraving the lines. That afternoon, after school was out, Gerald Taylor engraved the lines with a Hilti angle grinder fitted with a diamond crack-chasing blade. We like using the crack chaser because we can achieve a wide range of calligraphic line qualities. When the lines flow from thick to thin, they catch the light and shadows to achieve a variety of depth. The slab is cleaned again using TSP and scrubbed with brushes. From this point forward, it is sock-feet only for quality control. There is a chance that body oils could cause a resist when using water-based stains and when it comes to sealing, the surface must remain clean. It was my oversight to realize that most teenaged girls don't wear socks.

11. Students apply color. Using Smith's Paints water-based floor stains, flat washes were brushed in. Once they were dry, other layers were applied to create the illusions of texture and volume. Dry-brush, wet-on-wet, airbrush, dobbing,

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glazing and many other painting techniques were used to create the desired effect and to achieve surface variety. This was one of the first jobs where we had the opportunity to use some of Smith's specialty colors: green to gold flip-flop pigments, iridescences, and metallics.

12. Sealing. On this job, we used a one-part aliphatic polyurethane called Xymax. We started by lightly spraying the cut lines. This way, we can roll on the first layer very thin and tight without worrying about pooling. If the sealer is too thick, it will turn cloudy white. Here is another plus for the crack-chaser: if you want your lines black, a permanent marker slides smoothly along the sealed "V" cut without grinding away the felt tip and without bleeding into your work. After the lines are finished, lightly spray them again to lock them between the layers. Wait for the lines to be completely dry before rolling on the final layer with non-slip grit. Even though Smith's Color Floor has excellent UV resistance, it is nice that this work is covered and has full shade from about 11 A.M. on. When this wear coat is maintained, this design and its colors will last for many years to come.

When we finished, this 12-foot by 12-foot floor mural took teachers and students 98 hours combined.

13. Photo documentation. This is a very important part of what we do. These photos are used in our portfolio to share

with prospective clients, placed on Web sites, sent to publishers, arranged into promotional DVDs and mailed out as public art proposals. A high-quality camera and a tall ladder are well worth your investment. It is also important to acquire photo-release forms from everyone in your photos, especially if they are less than eighteen years of age.

In the case of this workshop, the story and images will be packaged together as a grant proposal to help schools enrich their environments with decorative concrete. It is much easier to obtain financial support from industries, grants, and individuals when they know their funds will yield a quality product. Talk is cheap, but when you can show sequentially what can be done, you can establish credibility and trust.



Images in Concrete specializes in custom engraving and coloring of existing concrete. Original designs are created as site-specific works of art that express the special interests of the public. For more information, contact Gerald Taylor, owner, at (870) 862-5633 or visit www.imagesinconcrete.com. Steven Ochs, who is an associate professor of art at Southern Arkansas University, may be contacted by writing to seochs@saumag.edu or by calling (870) 234-0397.

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CIRCLE #87 ON READER SERVICE CARD

Next Up: Self-Cleaning Concrete!

Photocatalysts can keep concrete clean and reduce air pollution.

by Michael Chusid, FCSI

Concrete Decor is typically filled with ideas you can use right away. Instead of stashing this article in your tool bag for on-the-job reference, however, take it to the beach this summer and read it when you have time to think about the future of our industry. For while photocatalysts have exciting potential for decorative concreting, they are still in the technology-transfer phase of moving from laboratory to commercial reality.

Strong sunlight or ultraviolet light decomposes many organic materials in a slow, natural process. You have seen this process, for example, in the way the plastic dashboard of your truck fades and gets brittle over time. Photocatalysts speed up this process and, like other types of catalysts, stimulate a chemical transformation without being consumed or worn-out by the reaction.

When used on or in a concrete structure, photocatalysts decompose organic materials that foul the surface. The organic compounds affected by photocatalysts include dirt (soot, grime, oil and particulates) biological organisms (mold, algae, bacteria and allergens), airborne pollutants (VOCs including formaldehyde and benzene; tobacco smoke; and the nitrous oxides (NO_x) and sulfuric oxides (SO_x) that are significant factors in

smog), and even the chemicals that cause odors. The catalyzed compounds break down into oxygen, carbon dioxide, water, sulfate, nitrate and other molecules that are either beneficial to or at have a relatively benign impact on the environment. Most inorganic pollutants and stains, including rust, are not catalyzed.

The products of the catalytic reaction are easy to remove from the treated surface because the surface becomes hydrophilic — a term that means “water loving.” A hydrophilic surface prevents moisture from forming beads of water that may cause stains by attracting and holding dirt and then streaking the surface. Instead, moisture forms a thin film across a surface that interferes with the adhesion of dirt. Rain or simple rinsing can then easily remove the dirt. The result: your building or structure stays cleaner and more beautiful. One construction industry application that is already available in the United States is self-cleaning glass, offered by both Pilkington and PPG.

Beyond the visual benefits, other properties of photocatalysis may prove to be even more important. It is being used to purify water, fight disease by reducing the spread of germs, and to increase the shelf life of fruit

by reducing the concentration of ethylene gas (associated with the ripening of fruit) in distribution facilities.

It is also being used to reduce air pollution. In one study, photocatalytic paving decomposed 15 percent of the nitrous oxide released by cars traveling the roadway and was more effective, in



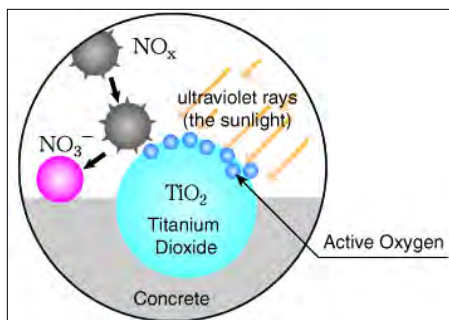
The brilliant white concrete of the new Jubilee Church in Rome is expected to stay clean for the ages thanks to a photocatalytic additive to the concrete.



Photographs courtesy of Mitsubishi

Photocatalytic titanium dioxide is energized by UV and accelerates the decomposition of organic particulates and airborne pollutants such as nitrous oxide (NO_x).

Diagram courtesy of Mitsubishi



Photocatalysts are used in Japan to keep paving, like these concrete unit pavers, clean and to reduce the effect of air pollution.

this regard, than planting trees on both sides of the roadway. Other advocates of the new technology suggest that urban air quality could be improved by up to 80 percent if all streets, sidewalks, and exterior building surfaces were treated, an optimistic best-case scenario and one that does not take carbon dioxide emission into consideration.

Japan, Europe already using the technology

While the research models are still being refined, there is enough confidence in the air-purification capability of photocatalysts that they are already being used in Japan to make polluted cities like Tokyo more livable. Mitsubishi makes the Noxer brand of photocatalytic concrete unit pavers. Toto makes treated ceramic tiles and Hydrotect Color Coat, a pigmented water-based photocatalytic coating. You can even make the air in your home or office easier to breathe with a photocatalytically-treated bouquet of flowers.

In addition to decomposing the chemicals that contribute to air pollution, photocatalytic

treatments are alleged to have other environmental benefits. Self-cleaning concrete will not require the use of the solvents now used to clean buildings, eliminating another source of pollutants. Moreover, clean concrete will reflect more light, reducing the heat buildup associated with "urban heat islands." This may help keep our cities cooler during hot seasons. It may also reduce the formation of smog since the chemical reaction that creates smog increases as air temperatures increase.

Europe is the home of the reigning showplace of photocatalytic technology, the Jubilee Church (also known as the Dives in Misericordia) in Rome, completed in 2003. The soaring structure was designed by the award-winning international architectural firm of Richard Meier & Partners Architects LLP. It is an awe-inspiring composition of 256 precast, post-tensioned concrete elements assembled into curved white "sails" that rise 85 feet into the sky.

The project was constructed with TX Millennium, a white portland cement with a photocatalytic additive that is manufactured by



In this laboratory test, an organic stain is applied to a ceramic panel and then exposed to sunlight that has been partially treated with a photocatalyst. The stain begins to fade almost immediately from the treated side and is nearly gone several hours later.

Photographs courtesy of Green Millennium

Suppliers

Essroc: tel: 610-837-3713; paul.batt@essroc.com; www.essroc.com.

Green Millennium: tel: 909-305-8882; gtseng@greenmillennium.com;
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Italcementi Group. Crushed white marble aggregate was also used to make the concrete a brilliant white. As the project's "technical sponsor," Italcementi Group estimates 12,000 man-hours went into developing and testing the new cement to make sure the photocatalytic material is compatible with the concrete and would, indeed, keep the building clean for the thousand-year service life used as the project's design criteria.

Italcementi Group's subsidiary, Essroc, is presently introducing the technology to the North American market with a primary focus on the precast concrete industry. The company's director of marketing, Paul Batt, also sees great opportunities for the technology in cast-in-place and other types of concrete construction. However, the wide range of conditions and materials affecting concrete requires a "case-by-case approach to ensure all the factors that impact the success of photocatalytic concrete are considered," he says.

Green Millennium, on the other hand, is already selling water-based photocatalytic materials in the U.S. Finding a way to put photocatalytic material into a water base was an important breakthrough because organic binders used for other types of coatings decompose in contact with photocatalysts.

In a recent demonstration project, they treated a guest room in a major Las Vegas hotel and measured a greater than 30 percent reduction in odors from tobacco and other olfactory nuisance; performance would have been better, the manufacturer claims, if the hotel kept draperies open during the day.

While Green Millennium's solution has been used on concrete in Japan, the

firm has not yet formally introduced the technology to the concrete industry in North America. Still, the material is available. Marketing director George Tseng says the product can be applied with an HPLV sprayer and 0.3 to 0.8 mm diameter spray tip to produce a fine mist pattern for a thin and even coating on the surface. In addition to new construction, he sees a huge potential demand for treating existing buildings and says the company plans to offer training programs for distributors and applicators.

Nanotechnology

The catalytic ingredient in all of these products is titanium dioxide (TiO_2). Titanium dioxide is widely used as a white pigment in paint, plastics, cosmetics, and a host of other products. Making it photocatalytic requires manipulating the material to create extremely fine nanotechnology-sized particles with a different atomic structure. At the nano-scale, this new type of titanium undergoes a quantum transformation and becomes a semiconductor. Activated by the energy in light, the TiO_2 creates a charge separation of electrons and electron holes. The electrons disperse on the surface of the photocatalyst and react with external substances, causing chemical reductions and oxidations and forming hydroxyl radicals that act as powerful oxidants to decompose organic compounds.

Extensive research into photocatalysts is being conducted worldwide, and they may one day prove to be an invaluable part of the concrete construction palette. Meanwhile, David Shepherd, Director of Sustainable Development at the Portland Cement Association, characterizes the

technology as "an interesting laboratory experiment. There is too much to learn about them before we declare the technology a breakthrough for concrete construction."

Before the materials can be widely used with confidence, industry standards must be developed and long-term exposure tests — in a variety of environments and concrete mixtures — must be conducted to determine the best dosage rates and application techniques, compatibility with admixtures, the longevity of treatments, and the treatment's effect, if any, on the durability of structures. For example, will the hydrophilic effect of the photocatalysts draw moisture into concrete in a way that could promote corrosion or freeze-thaw deterioration? And even if the photocatalyst manufacturer says its product is compatible with joint sealants and coatings, who will warrant that these materials will adhere to a treated concrete substrate?

Conventional pigment-grade TiO_2 is an inert substance with acceptable toxicological and environmental risks.



These buildings in France use photocatalysis technology.



Initial indications are that the nanotechnology forms of TiO_2 will also be acceptable, but prudence is justified pending further investigations. Researchers are discovering new photocatalysts that operate under visible light and that promise even more effective photocatalysis. Increasing production capacity should result in lower material costs. In addition, new applications are being found for photocatalysts in fabrics and clothing, personal care products, and other everyday products: for example, you can buy photocatalytic antibacterial deodorant pantyhose in Japan. What will happen when widespread use of photocatalysts results in a build-up of the chemicals in the environment?

Photocatalytic materials that are buried are not exposed to light and do not decompose organic materials. What will happen when the compounds are drawn out of the earth into the foods and water supply and then ingested by humans and other species? What might happen when they wash into shallow seas and decompose the microorganisms upon which the ocean's ecosystem feeds? These concerns must be addressed because catalysts are not depleted by the reactions they trigger; they continue to affect the environment long after the reason for their initial application has past. Pending further research and field long-term field trials, the readily identifiable environmental benefits of the new technology have to be weighed against possible and unknown risks.

On the beach

If you are reading this at the beach, you may be experiencing the power of the sun to decompose organic material — known in this case as “sunburn.” The tube of sunscreen you brought with you may include titanium dioxide in its list of ingredients; if so, it is the old-fashioned non-photocatalytic type. As you apply it to yourself, however, take time to daydream about how and where you might use the new type of TiO_2 in your concrete projects.

While photocatalysts may not be ready for major projects, I suspect many readers of this article will return from their vacation eager to test photocatalytic materials in their workshops and sample yards. Entrepreneurially spirited and willing to get their hands dirty with experiments, decorative concrete contractors have always been an innovative force in the construction industry, and are certain to find exiting

new ways to use photocatalysts to offer their clients a better product.



Michael Chusid, FCSI is an architect and marketing consultant specializing in the evaluation and promotion of innovative building materials. He is a consultant to many manufacturers and trade associations in the concrete industry. Based in Los Angeles, he can be reached at www.chusid.com.

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CIRCLE #25 ON READER SERVICE CARD

Removing Stains from Concrete

Stain removers are made specifically to counter the chemical composition of varying types of stains. Here's a rundown on the most common types.

by John Strieder

Photographs courtesy of Franmar Chemicals



Removing stains from concrete is one of the necessary chores involved in prep work, but nobody's idea of an adventure. Nevertheless, expect the unexpected.

"The first rule on cleaning paints, coatings, oil, stains, and so forth off concrete is "There are no rules,"" says Darryl Manuel, president of Vexcon Chemicals Inc.

Every situation is different, he says. The precise identities of coatings, stains and contaminants are usually unknown. Variables such as concrete porosity, depth of penetration, and strength of the surface layer all drastically change the parameters of the job.

Luckily for contractors, Vexcon and many other manufacturers produce stain removers that work as hard as they do. "Vexcon's products are designed to be commercial-contractor viable, not reduced-efficiency products that are designed for mass marketing," says Manuel.

Stain removal products for contractors are often specialized to work on a specific kind of stain, and sometimes, they are most effective only on certain chemicals that can cause that stain.

Removing paint

Take, for example, paint strippers. There are many different types of paint with varying chemical compositions, and a

paint remover that works on one coating might not work on another, says Prosoco Inc. business communication specialist Gary Henry. "Be prepared to test more than one type of paint stripper," he says.

Prosoco's Enviro Klean Safety Peel is "a good place to start," he says, especially if there might be more than one layer of paint to remove. Safety Peel comes in three versions chemically designed for different kinds of paint. Each includes a paste that is troweled onto the surface and covered with protective paper, then peeled off about a day later. Prosoco also sells gelled removers for tougher jobs.

Paint removers made by Surtec Inc. are solvent blends that conform to California and Northeast restrictions on VOC emissions. The company also produces a paint remover that is low in odor.

Franmar Chemical Inc. specializes in soybean-based environmentally friendly cleaners, and their Soy Gel Paint Remover is a good example. The gel will strip any coating from concrete — epoxies and urethanes as well as paint. A thick layer of the material will lift and dissolve one layer of paint after another. "The soy actually migrates through the coating," says Jason Davenport, marketing director at Franmar Chemical Inc. "It literally migrates through the coating and just buckles it away from the surface."



Soy Gel cleans up with water, unlike other strippers that need to be neutralized. And it is completely safe. "You could put this stuff on with your hands," Davenport says.

The remover won't evaporate like a petroleum-based stripper. And because it's not hazardous material, it can be left on a floor out in the open. "If a dog came in off the street and licked the stuff, he might poop all week, but it isn't going to hurt him," Davenport says.

Removing rust

Rust stains happen when metal, either on or in concrete, is exposed to weather and water. "As the metal oxidizes or 'rusts,' the water carries tiny metal particles onto the concrete and into the concrete pores, creating stains," explains Gary Henry of Prosoco. Aluminum creates white deposits, bronze and copper leave blue or green stains, and wrought iron creates orange stains, he says.

Prosoco produces several cleaners to combat rust: one for light, generalized stains, one for spot-cleaning heavy, deep-seated metallic stains, one for generalized rust stains, and a masonry cleaner for heavy stains on architectural block or decorative concrete.

The key to removing rust, says Davenport of Franmar, lies in one question: light or heavy?

Light rust can be scrubbed off with a light degreaser, such as a general-purpose household cleaner, and a scrub-brush, he says. "It will take surface rust right off."

Rust that is embedded in the concrete, on the other hand, will need a specialty cleaner. And that specialty cleaner will most likely etch it out with acid.

Franmar Chemical's rust removal product Emerge contains not soybeans, but a lightly acidic chemical. And it is recommended only for lighter rust. Heavy rust must be removed with heavy acid, Davenport says. "We stay away from very acidic petroleum products."

Some companies make cleaners that deal with rust by changing its chemical composition, he adds.

Surface Gel Tek LLC makes three gelled acid products that attack rust: a 20 percent acid solution for profiling, a 24 percent solution for cleaning and profiling, and a solution for stenciling.

"Really, it does it by just eating the concrete that it is stuck to," says Surface Gel Tek president Tamryn Doolan. "It's actually etching it off the concrete, and it does it really fast too."

The gelled acids work on adhesives to some degree, as well as paint overspray and spatter. Doolan says they are also effective on oil and hydraulic fluid stains.

In any of these cases, of course, the acidic product will roughen the profile of the concrete surface. Once the stain is removed, the slab will need to be hosed off with water to neutralize the gel.

Manuel of Vexcon notes that Certi-Vex Etch, one of his company's rust removers, has an added benefit beyond its effectiveness. "Overapplication will not 'burn' or open up the



Photographs courtesy of Prosoco

concrete beyond where the surface becomes sandy, such as will occur with overapplication of muriatic acid," he says. Vexcon's rust-removing systems, Certi-Vex Etch and Rust & Stain Remover, are both acid-based and require neutralization with baking soda, ammonia or TSP.

Removing adhesives

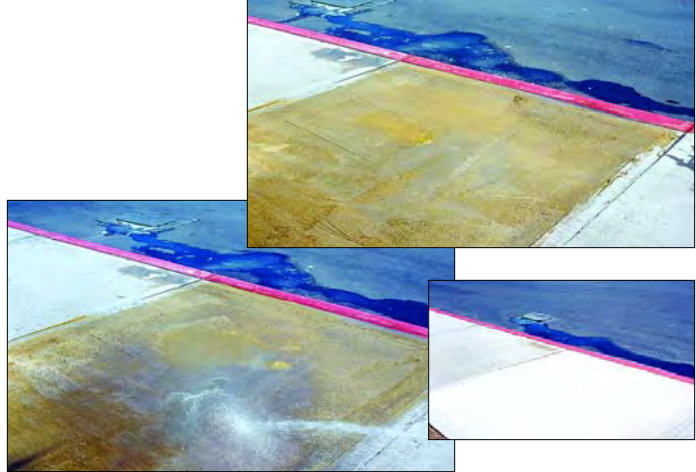
The process of removing adhesives, whether they are left over from tape, carpet or tile, starts with the application of elbow grease. "First remove as much adhesive residue as possible by mechanical means," says Henry of Prosoco.

Then, Prosoco recommends Sure Klean Fast Acting Stripper, made for debonding heavy-duty epoxies, acrylics, urethanes and mastics as well as for stripping paint.

Prosoco also makes liquid and gel removers for use on silicone adhesives. "The cleaner actually 'digests' silicone," Henry says.

Franmar Chemical makes a soybean and citrus remover that attacks tape adhesives and a mastic remover for materials such as carpet glue. The mastic remover will linger on a surface for days without evaporating like water-based cleaners.

Soy cleaners, in general, have intense migration properties, Davenport says. "We have to specially coat our bottle, because it'll actually migrate through the bottle," he says.



Soy is also a stable chemical to blend with other materials, he adds, so it won't give off unexpected fumes or odors.

Removing oil and hydraulic fluids

Cleaners that attack oil and hydraulic fluids are called degreasers. Typically, they consist of detergents, solvents or citrus agents.

How to choose? "A lot of times it's about economy," says Mark Granados, chemist with Surtec Inc. "Water-based cleaners can be diluted with water. Citrus and solvent-based degreasers can only be diluted with solvents."

For older oil stains, Prosoco recommends a combination of its Asphalt & Tar Remover with Stand Off Poultice Powder. This combination of liquid cleaner and blended clay powders forms an absorbent poultice paste.

Then there's gelled acid from Surface Gel Tek. It's mainly used on rust, but Doolan says it is also effective on oil and grease, drawing the contaminants to the surface for scraping. "Our product removes grease and oil as well as any products out there."

Franmar's soy-citrus adhesive remover will work on oil and tar up to a point, Davenport says, but as with rust, if the oil is embedded, a customer should be prepared for results that are somewhat mixed. "If the oil is impregnated into the concrete, again, you're going to have some problems. Cleaning products tend to lighten it but you will still be able to see where it was."

Use only as directed

Regardless of what stain is being lifted, Henry of Prosoco recommends testing. "Even when you're absolutely sure of what you're removing, and what to remove it with, test your product and procedure on a small, out-of-the-way part of the concrete. Test using the same products and procedures you plan to use for the overall cleaning. Test under the same conditions. A test in August might not be accurate for cleaning in October."

And, he warns, use the cleaner only as specified. "Results may be unpredictable if you use the cleaner for anything else," he says. "Never dilute or mix any concrete cleaning agent with water or other substances unless specifically directed on the product label."



Photographs courtesy of Vexcon

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Plate Compactors and Rammers: Making a Choice

by John Strieder

When raw soil or aggregate needs to be compacted before a pour, what do decorative concrete contractors use to pound the ground?

Rollers are too much machine for smaller jobs. So generally, the choice is between rammers and vibratory plate compactors.

The most important factor in making that choice is the type of soil to be compacted. A rammer, which uses a piston set and springs to generate force, works best on cohesive soils, which are composed of clay and silts. Vibratory plates, on the other hand, are low-amplitude, high-frequency machines. They are most effective compacting granular soils, which are made up of sand and gravel.

The particles in cohesive soil are small and densely packed. When dry, it's hard, and when moist, it's plastic and easily molded. A rammer's forceful strokes are ideal when working this kind of ground. "Clay sticks together, and the ramming motion of the equipment forces air out of the soil," says Peter Cannon, spokesman for Multiquip Inc.

Granular soil doesn't cling to itself like cohesive soil does, so the vibrations of a plate compactor do the job just fine. "The vibration action reduces the frictional forces at the contact surface, allowing particles to fall freely under their own weight," explains Jay Baudhuin, compaction product manager at Wacker Corp. "At the same time, as the soil particles are vibrating, they become momentarily separated from each other, allowing them to turn and twist until they can find a position that limits their movement."

Vibratory plate compactors are three to four times more productive than rammers in terms of covering surface area in a given time frame, says Frank Multerer, president of MBW Inc. And a plate will have significantly fewer maintenance problems, he says. "Rammers are just more self-abusive than plates."

Density specifications are yet another factor to consider. "If the machine does not have enough power, the proper density will not be reached," Baudhuin says. "If it has too much power, overcompaction can occur."

Rammer roundup

Contractors looking to buy a rammer will most likely not be overwhelmed. "When choosing a rammer, the only thing you have to kind of watch out for is the size of the rammer," advises Multerer.

Variables that distinguish rammers from one another include engine type (two-cycle, four-cycle or diesel), shoe size, operating weight, travel speed and impact force.

The XH670 Stomper rammer, made by Stone Construction Equipment Inc., can be customized to suit a customer's needs. This general-purpose rammer is the lightest in the Stone family. Its impact force is not as great as other Stone rammers, but for decorative contractors, its portability makes for a good trade-off, says Stone vice president of engineering Frank Wenzel. "Decorative contractors are going to be more interested in getting a good solid foundation. They don't need to be concerned with density specifications like they would be if they were laying gas lines."



Wacker Corp.'s two-cycle oil-injected rammers, powered by the WM 80 engine, are designed to be less complicated and lighter than comparable four-cycle rammers. The machines are easy to start and feature a unique air filtration system.



Also, Wacker's shock-mount systems reduce hand-arm vibration.

MBW Inc.'s R440 Series rammer is that company's newest series of rammers. The tools have a larger shoe size, 11 inches by 13 inches, than their cousins, the R420 rammers. Powered by a 3-horsepower four-cycle Honda engine, they deliver up to 3,800 pounds of compaction force and up to 700 blows per minute.



The MT-84F rammer is Multiquip Inc.'s most powerful four-cycle rammer, boasting 3,950 pounds of impact force. Its 3.5-horsepower gasoline engine makes it more fuel-efficient and quieter, with lower emissions, than two-cycle rammers. This rammer also offers longer intervals between air filter service and

more blows per minute than its Multiquip predecessors.

Multiquip is also promoting three new gasoline-powered rammers, the MT-65HA, MT-74FA and MT-84FA. Features include contoured vibration-reducing handles, functional "duck bill" fuel caps and diaphragm carburetors, and built-in guide handle retainers that prevent overextension. The MT-65HA delivers 2,900 pounds of impact force, the MT-74FA generates 3,100 pounds of centrifugal force, and the MT-84F is good for 3,500 pounds of impact force.

Plate compactor choices

When buying a plate compactor, contractors will consider variables such as base plate size, travel speed and weight. Centrifugal force is important, says Multerer of MBW, but less so than amplitude or mass. "It's perhaps the most misleading spec we give people. It's the least important of those three."

Plate compactors come in reversible-plate or forward-plate models. Forward-plate machines are less expensive, easier to maintain and have fewer mechanical problems. But reversible-plate compactors were designed for use in spaces where the contractor has no room to turn around, and in those circumstances, they are superior.

Reversible-plate compactors have frequencies that are tuned differently from forward-plate models, says Wenzel of Stone. Because they achieve more lift, they can apply more of a pounding. "They can be used for more general purpose work, on soils with more cohesive content," he says.

Stone recommends three plate compactors to decorative concrete contractors. The SFP2200 is a lightweight general-use model that is ideal for contractors who are more concerned with transporting the machine than putting an adequate amount of mass on the ground. If a contractor wants more force to compact larger aggregate, the SFA3500 will do the trick. The plate is a little



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flatter and smaller than some, so it will go up on edges, and its lower profile helps it get right up next to buildings. The RP522 is a reversible-plate machine that hits the hardest of the three.

Wacker's WP 1550 series of plate compactors features a wear-resistant ductile iron base plate that offers high strength and shock resistance.

Multiquip recently began selling the Mikasa MVH-306 line, which replaces an older series. The MVH-306 generates 10,125 pounds of compaction force, and its newly designed plate is sized 18 inches by 34 inches. Other improvements include a redesigned sealed bottom belt cover and hydraulics located on the handle. It comes with either a 7-horsepower diesel or 9-horsepower



Equipment Applications


	Granular Soils	Sand and Clay	Cohesive Clay	Asphalt
Rammers	Not recommended	Testing recommended	Best application	Not recommended
Vibratory Plates	Best application	Testing recommended	Not recommended	Best application
Reversible Plates	Testing recommended	Best application	Best application	Not recommended
Vibratory Rollers	Not recommended	Best application	Testing recommended	Best application
Rammax Rollers	Testing recommended	Best application	Best application	Not recommended

gasoline engine and allows operators to compact up to 9,000 square feet per hour.

MBW recommends two plate machines: the GP1800 and the GP3000. The GP1800 is a lightweight, economical machine designed for small to medium-sized soil applications. It is ready for use in confined areas and can achieve up to 12 inches of lift. The GP3000 series are all-purpose middleweight compactors that handle granular and mixed soils of depths up to 18 inches. MBW press materials note that many 20-year-old GP3000s are still operational, a testament to their long-term performance abilities.



"I always advise people to go with a machine that is a little more than what they might need under ideal conditions," adds Multerer. "You can't control moisture content."








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Bomanite Corporation has been a leader in the decorative concrete industry for more than half a century. What began as a small company with a single vision has now grown into a worldwide organization that offers its franchise partners five separate licensing programs: Imprint, Toppings, Polishing, Precast and Grasscrete. Through these five programs, Bomanite Franchise Partners are able to provide a full range of architectural and decorative concrete products to meet every decorative concrete need. These programs are unique because they are developed around a systems approach, using quality products installed properly for long-term durability and beauty.

"I can really say I'm proud to be a Bomanite contractor," says Jeff McCool, owner of Jeffco Concrete Contractors in Tuscaloosa, Ala. "I'm not just some guy trying to stamp concrete."

Affiliating with Bomanite has opened many doors and provided great opportunities, says McCool, who joined the Bomanite team 18 years ago. He is especially appreciative of Bomanite's national account program, where the company contracts with big commercial clients who need work done in many states. As a Bomanite franchisee, he is the contractor of choice for these accounts. "The big national accounts don't want to deal with every Tom, Dick and Harry in each town," he says.

If Bomanite has an account with a big retail or fast-food chain, the company will hold a training session for all the contractors from different states so they can learn the look that is desired and exactly how to achieve it. "That way, there's no learning curve on the job," McCool says.

Bomanite stands apart, says Matt Casto, vice president of business development for Bomanite, because the company both sells products and controls their installation. This is a huge plus for architects and engineers who are concerned about the end result. "An architect can tap into trained experts," he says.



John Williams, an architect with SDA Partnership in Irvine, Calif., agrees that Bomanite has been great to work with on a recent project that has multiple locations around the country. He likes the range of stamps and colors that Bomanite offers, he says, but he is especially happy with the attention that is paid to quality and detail. "Bomanite always follows through with the general contractor," he says, "and makes sure the specifications are followed. They've been really helpful."

50 years of quality

The Bomanite process for stamping cast-in-place concrete was developed in the mid-1950's by Brad Bowman.

Bowman studied sculpture and then became a camouflage expert during World War II. After the war ended, he went into the construction business.

It wasn't long before he developed an early imprinting method that he called "ornamented concrete," which he initially used on the sidewalks of Carmel, Calif. The technique, revolutionary for the time, was deceptively simple in concept: The V-shaped blades of a metal



Brad Bowman, founder of Bowmanite, inside one of the earliest stamping tools.

time as a part-time consultant. From its Palo Alto, Calif., offices, Bomanite Corp. began expanding its reach by establishing franchises around the United States as well as in other countries around the world. In 1990, the company moved its corporate offices and manufacturing plant to a larger facility in Madera, Calif. In 2004, Bomanite opened a second manufacturing facility in Knoxville, Tenn., in order to meet the growing demand for Bomanite products. The facilities produce dry shake color hardener, integral color, release

stamping platform imprinted a pattern on fresh concrete. By using at least two stamping units, the first stamp could be removed and placed next to the second stamp to produce a continuously printed decorative pattern. Soon, contractors all over California were using the method.

In 1970, Bowman co-founded Bomanite Corporation with three partners. Eventually the three bought him out and Bowman stayed on for a

time as a part-time consultant. From its Palo Alto, Calif., offices, Bomanite Corp. began expanding its reach by establishing franchises around the United States as well as in other countries around the world. In 1990, the company moved its corporate offices and manufacturing plant to a larger facility in Madera, Calif. In 2004, Bomanite opened a second manufacturing facility in Knoxville, Tenn., in order to meet the growing demand for Bomanite products. The facilities produce dry shake color hardener, integral color, release

agents, imprinting tools, fibers and various other products for the installation of architectural concrete paving. Today, Bomanite products and projects can be found around the world. Project installations range from single-family residences to multimillion-dollar sports and entertainment complexes. Auto dealerships, casinos, golf courses, country clubs, health care facilities, restaurants, shopping centers, theme parks, hotel/resorts, museums, municipalities and governments have all trusted Bomanite with their decorative concrete needs.

"At Bomanite," Casto says, "art, technology and the installer all meet as one."

Licensing programs

The original license agreement, Bomanite Imprint Agreement, covers cast-in place colored, imprinted and textured concrete. Bomanite Toppings Systems focuses on the renovation market. Bomanite Custom Polishing is a diamond-grinding process that promotes age-proven terrazzo-type finishes. Bomanite Precast Elements is a program that focuses on precast manufacturing of high-end decorative



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Bomanite Franchise Partners stay on the cutting edge of the decorative concrete industry through their affiliation with the worldwide network of licensed

Bomanite contractors. Although owning a franchise may not be for everyone, there are some definite advantages for doing so. They include

access to Bomanite brand products, tools and proven systems; brand name association; peer support and assistance; support at the corporate level, which

includes national marketing and business development efforts; specification assistance; product research and development; and systems training.

"Our industry is very unique," Casto says. "The product is only as good as the contractor who installs it. You have to have the right contractor with the right training and the right expertise."

Training is provided to the Bomanite network

through Bomanite University. This program consists of a number of technical and business improvement workshops, which are scheduled throughout the year. Experts in the industry attend these trainings and provide valuable information to all franchise partners who attend these free events, but these experts aren't the only ones who have something to teach. Through these events, the Bomanite network shares information with one another and exchanges ideas. They share methods for installation and ideas for creative use of products. Being a member of a tight-knit network of contractors, Bomanite Franchise partners have peers with whom they share tools and equipment, as well as joint venture on projects. They meet to discuss business practices and support one another in growing their businesses.

Some of the company's Franchise Partners have been with the company for the entire 35 years that Bomanite has been specially licensing their contractors. "We have great working relationships and we sometimes team up when we have huge projects or need extra manpower," says McCool, whose own franchise employs about 65 people. "I love the camaraderie with my fellow Bomanite contractors."



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Bandon, Oregon

by John Strieder



A seaside town is defined by its boardwalk. And for too long, the boardwalk in Bandon, Ore., was an unimpressive asphalt path.

Bandon attracts its share of tourists, who stop to play golf, take chartered fishing trips and stroll the shore. A fancy new boardwalk could only make the town a better draw.

Thanks to concrete contractor Greg Brock, the Port of Bandon, which managed the project, got what it wanted and then some.

The North Bend, Ore., artisan consulted with the walkway's planning architect before it even went to bid. "A lot of architects up here on the Oregon Coast don't understand a lot about decorative concrete," he says.

When the Port of Bandon finally put the "Meandering Walkway" project out for bid, Brock Construction won the contract.

The plans called for a 600-foot stretch of concrete that was half exposed aggregate, half decorative concrete, with the two sides divided by a wavy row of inlaid bricks.

The decorative surface was going to be troweled and stained. But after Brock was hired, he made another suggestion: a stamping job instead, using the Coquina Stone With Sea Shells feathered texture mat from Proline Stamps. Impressions of shells, sea horses and assorted sea life would improve traction and complement the seaside setting. His clients approved his idea and he set to work. "This is just an example of the beauty of a specialty concrete contractor being able to negotiate," he says.

The exposed aggregate side was finished first. Exposed aggregate leaves behind something of a mess, he says, and his crew washed it into the subgrade of the other half of the walkway. Then they poured that side and stamped it.

To color the job, Brock chose Durango Tan shake-on color hardener from QC Construction Products, plus a Terra





The two sides of the walkway were also doweled together, to keep one half from settling below the other over time.

After both sides were finished, the entire concrete surface was coated with an acrylic sealer.

The center crevice was filled with bricks, most of which are temporary, Brock says. The city continues to sell personalized brick sponsorships, placing bricks with sponsors' names into the walkway as they are sold.

Brock and his crew took about a month in late spring 2005 to do the job. If the responses of passersby during construction are any indication, it is already impressing visitors.

"It was just a fun job," Brock says. "With people going by, tourists, there were tons of oohs and ahs."

Brock is even more excited about finally breaking the ice between governments and decorative concrete contractors in his region.

He's performed commercial, hospital and residential work before, but the Bandon walkway was his first government job. He's already into his second: a faux cedar-plank walkway for the waterfront in Coos Bay, Ore., a job contracted by the Oregon Department of Transportation.

"I think times are changing," he says. "People are beginning to see the benefits of decorative concrete."



Cotta powder release agent from Symons Corp.

Brock went with shake-on instead of integral color because he wanted to maintain color control on a job that ultimately took eight to 10 pours to finish. "With integral colors and multiple pours, you really have to be on the ball with mix design," he says. "To me, there were just too many variables."

The concrete mix included a fiberglass mesh additive to improve its strength and allow workers to pull away texture mats without damaging the curing slab.

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TechFab/C-Grid Contest Inspires Concrete Craftsmen

A multilayered bathroom sink cleaned up at the first annual TechFab/C-GRID Decor Concrete Design Competition.

The sink's designer, Toledo, Ore., artist Michael Dahl, took first prize in the contest, held in April and sponsored by TechFab LLC.

Dahl's winning sink top has three concentric layers that suggest an egg sliced in half. The primary surface is gray exposed aggregate, while a lower level and most of a back ledge are colored and textured to resemble greenish jade slate. Embedded flecks of stainless steel and hand-blown funnels of glass give the piece a bit of flash.

The sink's concentric ovals are a motif that appeals to Dahl. "I'm just really big into the ovals and symmetry," he says.

Second place went to Mark Lesnick of Mark Concrete, based in Moss Landing, Calif., for work he performed at a home in Carmel, Calif. The project consisted of dark sage green kitchen countertops and two Craftsman-style fireplaces, one dark green and one with a variegated gray finish.

John Cox of Cox Decorative Concrete, a Clifton, Ill., company, came in third with an apricot-colored bathroom sink top that features a curved



Michael Dahl



Mark Lesnick



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outer edge and tapered basin lip. The edge and basin lip were finished without a slurry mix, giving them a rougher look than the countertop. A commemorative NRA coin and a piece of polished stone accent two corners of the piece.

The winners were selected by a team of three judges: Bent Mikkelsen, publisher of *Concrete Decor* magazine; Michael Smith, founding partner of Equus Design Group; and Lauriel Leonard, Allied ASID, Dex Studios.

TechFab sponsored the design competition to showcase the best and brightest the decorative concrete industry has to offer. Contestants were told to create an original concrete countertop, vanity, tabletop or architectural décor product for a residential or commercial application using TechFab C-GRID materials. C-GRID is a high-strength carbon grid that controls cracks but is stronger and lighter than steel.

C-GRID can be used in place of, or along with, steel mesh and light rebar. Unlike steel, carbon grid can be placed just below the finished surface and allows for thinner, lighter countertops.

Dahl, the award-winning artist, began working with small concrete slabs and foundations in 1994. He started designing, building and creating with concrete in earnest in 1999, incorporating ideas from the fields of graphic design, sign manufacturing, mold-making and concrete fabricating. In addition to his concrete work, he owns and operates a sign and screen-printing shop.

TechFab LLC is headquartered in Anderson, S.C., and manufactures structural grids, adhesive-bonded nonwoven scrims and scrim composites. Its products are used for cement and concrete reinforcement, roofing systems, high-performance sail cloth and infrastructure repair and rehabilitation products. More information about the company can be found at www.techfabllc.com.



John Cox

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The admixture consists of a proprietary blend of water reducers (also known as superplasticizers) and micronized calcium carbonate. It does not cause gelling like other water reducers, and it does not retard the setting time of concrete.

"You not only get higher-strength concrete, you also get more dense concrete that is less permeable," says Fritz-Pak Corp. president Gabriel Ojeda.

Concrete with lower water content has higher compressive and structural strength, leading to faster demolding and a faster cure. Concrete that is drier at pour is also denser and less permeable, so it is less prone to staining. But concrete with Counter-Flo also has fewer air bubbles because of its relative wetness, so it offers better pattern definition.

On top of all that, Counter-Flo is colorless, so it can be used without fear of adding the slightest stray tint to a colored countertop.

Counter-Flo comes in an eight-pound resealable plastic container. The container yields about 66 scoops, enough to treat 1,320 pounds of cementitious materials. If a contractor mistakenly puts in too much, it won't hurt the pour. "If you overdose, you will not get any negative effects," says Ojeda. "We chose materials that will be a little more foolproof."

Counter-Flo is added to dry concrete or mix materials before the resulting batch is mixed with water, about 20 percent less than usual. The admixture can help disperse a pigment within a mix if added before or at the same time as the colorant. It can also be sprinkled over wet concrete.

The additive is compatible with most concrete and cement admixtures, but testing is recommended prior to production use. It will gradually lose its effect within about 45 minutes of adding water, faster in warm climates. But if its effects wear off, fresh unplaced concrete can be redosed to regain flow properties.

For more information, visit www.fritzpak.com or call (888) 746-4116.

Freestyle Stains: a new option from Brickform

Freestyle Stains are a new line of concrete stains from Brickform. But they are not acid stains, and their carrier is not an acrylic or polyurethane.

Instead, the stains are water-based, polymer-modified products, specifically engineered to last in high-traffic, high-maintenance areas.

When Freestyle is applied to a stripped and freshly washed concrete slab, it penetrates the surface of the porous concrete. "It saturates like a penetrating sealer would, so the bonding properties are similar to those in a sealer," says Brickform technical manager Clark Branum. "But it is not a sealer, and there is no chemical reaction."

The stain is permanent and breathable. It wears as the concrete wears, instead of being worn away like some layered coatings. "It doesn't require sealant," Branum says. "In fact, it'll perform better if there's no sealant."

Because the polymer-modified stain requires no sealing, maintenance can be performed without stripping and resealing, he notes. "It's a really strong maintenance product. You can basically just pressure-wash and reapply."

The stains can be applied over and over as needed with no buildup. They are particularly kind to indecisive clients or contractors. A Freestyle-stained black slab can be colored red, then recolored black in the same day.

Freestyle Stains come in two variations, both multipart applications sold in kits. Freestyle Solid-Color Kit is a four-component application that includes a dry pigment. The Freestyle Enhancer Kit, a faux finish application, is three parts including a liquid pigment. Just mix according to the instructions and add water, and Freestyle is ready to go.

The Solid-Color stain is opaque, so it will hide oil, grease and rust spots on properly prepared surfaces, while the Enhancer stain is transparent. Fresh concrete must cure for 28 days before Freestyle is applied.

The Enhancer faux finish kit offers many of the advantages of acid stain but is completely acid-free. There's no messy cleanup or chemical reactions and no need for neutralizers or nonacidic sprayers. "You basically just color the floor and apply wax to it," Branum says. "That's it."

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CIRCLE #63 ON READER SERVICE CARD

Grow Your Business with Customer Service

by Richard Nutthall

If we understand the business axiom that says it's five times more expensive to attract a new customer than it is to earn more business from a past customer or through a referral, we begin to grasp the dollars-and-cents dividends to be reaped from excellent customer service.

The cost of customer acquisition is rarely quantified or understood and is almost universally understated. Whether you advertise in the phone book, local newspaper, local radio, household throwaways such as the Penny Saver, or on doorknob flyers, the money wasted on uninterested circulation is high.

What I observe today is a complacency or even laziness that comes from good times. "We've got more jobs than we can handle, and therefore I don't even follow up on my leads," people tell me. This is dangerous. It's a belief that can lead to indifferent customer service. Why expend the effort to please customers when we are booked months ahead? The Boot Hill of American business is populated with companies operating with this misguided belief. Remember, business is cyclical. Times will change. Your phone will suddenly stop ringing. What then?

This brings us back to the economies of excellent customer service. You must understand that providing excellent customer service is not an expense but an investment. The cost of acquiring new customers through advertising rather than growing it with referrals from satisfied customers could eventually reduce your business to financial ruin.

Let's tie customer service directly to profit. Who commands and gets the highest fees for services rendered? The slipshod operator who burns one customer after another? Or the high-quality business that has a huge referral book of happy customers? Have you ever noticed that when you are referred by one of your satisfied customers that price is rarely an issue? Why? Because the referral implies that you are good, professional and will deliver on your promise — you have a track record of success. People will pay more for a sure thing. Focusing on customer service is the path to becoming a sure thing. And

what's more, you didn't spend a dime in advertising to attract this new business.

Here's another way to look at the value of customer service. Think of your business as a brand, just as the Ritz-Carlton is a brand. A brand is not a logo or a "thing." A brand is an experience. When you think of the Ritz-Carlton, you think of the experience of being pampered — of service that is off the charts. How would your customers describe the experience of your business? Are you competent, reliable, professional, true to your word, friendly, eager to please, detail-oriented, the Ritz-Carlton of your industry? Or are you sloppy, failing to deliver on your promises, difficult to work with, unprofessional, the Sid's Roadside Motel of your industry?

Think of this: Both the Ritz-Carlton and Sid's Roadside Motel offer you the same service — a place to spend the night. The difference is that the Ritz-Carlton charges you \$400 per night while Sid's is lucky to get \$40 per night. The Ritz is booked a year in advance while Sid's hangs a permanent "Vacancy" sign.

Sure it costs more to do business the right way. And sure, some customers are difficult, demanding nitpickers. But doing business the right way, with excellent and consistent customer service, allows you to maintain an acceptable profit margin. Furthermore, an excellent operation allows you to adjust when you know you are working for a difficult customer. You should not hesitate to charge up front for those customers you know are going to be difficult. In doing so, you can deliver the quality they expect and get your profit as well. Keeping demanding customers satisfied should be one of your benchmarks for excellent customer service.

Customer service is real and should be addressed with conviction and planning so that you secure the future of your business today in good times and tomorrow when times are not so great.



Richard Nutthall is national sales manager for the Residential Division of White Cap Construction Supply.

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The Institute recommends that 10 percent to 20 percent of the cement in a concrete countertop mix be replaced by metakaolin. This increases the compressive strength, density and workability, and decreases efflorescence and alkali-silica reaction. Metakaolin can interfere with acid stain reaction, however, so contractors should use caution when planning to create a countertop with an acid-stained look.

For more information about purchasing metakaolin by the bag, call (888) 386-7711 or visit www.ConcreteCountertopInstitute.com. For information about PowerPozz by the pallet or truckload,

contact Advanced Cement Technologies at www.metakaolin.com or (800) 595-7552.

Dow looks for wows

Dow Corning showcased its latest offerings in building-protection solutions at the 2005 World of Concrete in Mexico. Featured products included water repellents that don't contain solvents, stain protection products and price-competitive silicone sealants.

Dow Corning Z-6683 Water Repellent Emulsion will help manufacturers avoid solvent regulation problems when they are formulating. These water repellents perform at a level comparable to solvent-based products.

Dow Corning Z-6704 Silane Stain Repellent protects a wide variety of masonry substrates against oil and water penetration and staining. It chemically bonds to a substrate without changing surface appearance, and it can be brushed, sprayed or rolled onto a surface.

Dow Corning Contractors Weatherproofing Sealant (CWS) and Dow Corning Contractors Concrete Sealant (CCS) are 100 percent silicone sealants intended for use on low-rise buildings such as schools, churches, warehouses, strip malls, condominiums, small apartment buildings and office complexes. The professional-grade sealants are designed especially for the small- to mid-sized construction market.

Visit www.dowcorning.com/construction to learn more.

Concrete that can take the heat

Allied Marketing Systems, the company that developed the AccuCrete gypsum floor underlayment system, has brought another innovation to market. The new product, AccuRadiant, is pour-in-place gypsum concrete designed for radiant floor heating systems.



The concrete can be safely poured over hot water tubes, electric heating cables or mats, securing them in place and drying in as little as 90 minutes. Its lightweight, thin thermal mass improves heating response time, does not shrink or crack, and is formulated to resist breakdown. The concrete also improves the acoustical performance of a home, stiffens the floor and seals perimeter walls.

To learn more, visit www.accucrete.com or call (800) 392-1320.

Portable but versatile

CS Unitec's new wet/dry industrial vacuum, Model CS 1225, is designed for efficient dust extraction on the job site.



The portable CS 1225 weighs less than 25 pounds, comes with a 15-foot hose and 25-foot power cord and includes an automatic filter cleaning system. A tool adapter easily connects to portable electric tools, and an automatic shut-off sensor protects the motor and filters during wet vacuuming. The "Power Take Off" outlet activates the vacuum from a power tool switch and includes a 7-second shut-off delay. An Automatic Pulse Filter Cleaning System vibrates both of the vacuum's filters to remove dust. The vacuum cleans itself automatically or manually.

For more, visit www.csunitec.com or call (800) 700-5919.

Fantastic finishes

Sto Corp., a world leader in cladding, coating and restoration systems, is reaching out to the Insulated Concrete Form (ICF) market with three finish system options for ICF walls. Each option provides long-lasting protection and is available with a wide range of color and texture choices.

Sto's multiple-layer coating system is recommended when walls are straight and flat with little leveling required. This choice utilizes Sto base coat, reinforcing mesh, an optional Sto Primer, and a choice of Sto finishes.

The use of Sto's Exterior Insulation and Finish System (EIFS) is recommended when walls have a greater need for leveling. This choice adds additional Sto insulation to the exterior and includes reinforcing mesh, an optional Sto Primer, and one of the many EIFS finishes offered by Sto.

When walls need to be finished with a harder finish, the choice that includes Sto Powerwall Stucco is recommended. It incorporates the stucco, a metal lath, Sto Primer, and a Sto Powerwall finish.

Sto textures currently on the market for ICF systems include Fine, Medium, Swirl, Freeform Custom, Limestone, Granitex and Decocoat. Sto's internal design consultative group, Sto Studio, will provide architectural renderings of possible color options to help the contractor or the owner make a decision.

For more information, visit www.stocorp.com or call (800) 221-2397.

New EIFS powders

Rhodia Performance Coatings & Services has developed a new group of Rhoximat latex powders for exterior insulation and finishing systems.

The first two products in the new series, Rhoximat UP 820 A and Rhoximat HP 860 H, both have excellent adhesion and water-repellant properties, making them resistant to freeze-thaw. Rhoximat UP 820 A was designed to offer exceptional adherence to polystyrene, especially in humid conditions, while Rhoximat HP 860 H offers remarkable water repellence. The new powders also have exceptional mechanical properties, improving the system's resistance to impacts and perforation. Both latex powders are redispersable. For more, visit www.rhodia-pcs.com.

Forms lighten the load

B.E.P. Forming Systems Inc. has introduced the aluminum forming industry's first lightweight combination hand-set or gang-set aluminum form panel, the B.E.P. Light Panel.

Packed with the same features as B.E.P.'s patented Big Panels, the Light Panel weighs under 100 pounds, can be used in commercial and residential applications and can complement any other aluminum forming system.

B.E.P.'s new Light Panels are available in standard heights of 1 foot to

10 feet and come in all of the company's form line designs: Smooth, Georgian Stone, Adobe Brick, Vertical and Textured Brick.

The new panels are lighter, have fewer parts, and are easier to set and strip. If the job dictates forms should be crane-set, then these panels can be ganged together for that use.

For more information visit www.bepformingsystems.com or call (866) 237-3676.

Compressor saves energy

Mi-T-M Corp. has introduced a three-phase, two-stage electric air compressor. When three-phase power is available, operating three-phase motors incurs less energy costs than one-phase motors.

Features of this portable 30-gallon compressor include: three-phase 5.0 HP motor; two-stage compressor with aluminum head and splash-lubricated cast-iron crankcase and cast-iron cylinder; 16.5-inch fly wheel; large canister intake filter; 14 gauge two-piece belt guard; powder-coated ASME-certified 30-gallon receiver; stainless-steel braided discharge hose; auto start-and-stop with continuous run option; regulator and two gauges for tank and outlet pressure; and manual drain valve. For more information, visit www.mitm.com or call (800) 553-9053.



Inspired new drills

Hitachi Power Tools today announced two new cordless hammer drills. The Hitachi DV18DMR and Hitachi DV14DMR incorporate advanced features to help users power through wood, plastic, metal, concrete and stone materials with ease.





The DV18DMR, an 18-volt cordless hammer drill, delivers 550 in/lbs of torque (class-leading), while the DV14DMR, a

14-volt cordless hammer drill, delivers 460 in/lbs of torque (also class-



leading). The drills feature no-load RPMs of 0-400/1,800 (DV18DMR) and 0-400/1,750 (DV14DMR), plus aggressive impact rates of 0-4,800/21,600 BPM (DV18DMR) and 0-4,800/21,000 BPM (DV14DMR). Both offer two-speed transmissions, and their two-piece rare-earth magnet motor guarantees reliable power.

The flexible drills can be set in drill mode to tackle drilling applications, driving mode for fastening applications or hammer mode to hammer-drill into concrete and stone. They are also compact and lightweight.

The new DMR hammer drills reflect the ergonomic Inspire design being implemented by Hitachi Power Tools. A nonslip elastomer grip provides more control and absorbs vibration. Both drills include a five-position belt hook with an integrated LED work light.

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



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