Windows of Opportunity

One step at a time.
A well-timed break.
Kim Basham explains how to prevent surface defects and costly call-backs.

But wait. There’s more!

- Blender Group Shines
- Dick’s Sporting Goods Chooses DuraFloor HP for Field & Stream
- No Cute Cat Videos: L&M on YouTube
- Roy Bowman Unleashed
- ASCC Election Results
- Unsolved Mysteries
- Find the Prez in the Pizza!
Do you want to learn more about concrete? Then this issue of Concrete News, like ones in the past, is the answer to this question.

Those of us who have been fortunate to visit or live by the sea know that ocean tides have a huge effect on the daily activities upon those who rely upon it for their livelihood. As the saying goes, “Time and tide wait for no man.”

Concrete is similar. It has a time all of its own. As soon as the first ounce of water is added to the dry mixture of cement and aggregate, the clock is started. It has to be mixed, transported, placed and finished in a finite amount of time, and that amount of time is variable upon a number of factors, some you control and some you can’t.

How do you know when to finish concrete? Experience will tell you that you will meet with disaster if your timing is off. It comes as news to no one that concrete is not very forgiving to the inexperienced finisher. It is a little like hitting a golf ball on a tee that continues to move. Good luck.

Luck improves with experience; both the type that is learned the hard way — in the field — and the type that is learned from others. With age and wisdom, many of us have come to the conclusion that no one should try to learn it all only the hard way. Our spotlighted article by repeat contributor Dr. Kim Basham, P.E. helps expand your experience, introducing the concept of Windows of Finishability. He does a great job of explaining the importance of timing and the sequence of concrete finishing steps, including the step named “waiting.” Adding to your knowledge. Improving your luck.

In this issue of Concrete News we are pleased to introduce you to others who contribute to the collective knowledge of the concrete industry. More experience to learn from, more stories to share, more information to make your next concrete project your best concrete project. I hope you benefit from your time spent with this issue of L&M’s Concrete News. Now in its 12th year.


Greg Schwietz
It was back in 1999 that Daniel Marquez met Roberto Rios who was, at that time, the L&M Mexico and Central America Sales Manager. Marquez was soon introduced to L&M President, Greg Schwietz. Roberto had put together that original meeting and later arranged a face-to-face meeting with Greg at the Mexican chapter of The World of Concrete in Mexico City.

Marquez commented, “At that time, I was working for a construction company and always had a dream of starting my own company. Roberto knew of my aspiration and called me to tell me that he had ‘the perfect job' for me. Little did I know that he and Greg would ultimately hand me the job of starting my own company as the L&M Mexico — Central America Distributor/Representative. Roberto told Greg of my connections here in Mexico and also of my background in the concrete construction products business. A week later I was sitting in the L&M corporate offices in Omaha, Nebraska, meeting with Greg and all the other principals from L&M as they set me up as my own L&M distributor for Mexico. It was a fast process that set my head spinning.

“Soon after I met Greg, I realized that I had just made a lifelong supply connection and true friend. He helped me to make my dreams come true. L&M has given me the very best in products to do the job, technology and great personal support. Since then my company, The Blender Group, has grown immensely and gained a lot of loyal customers...”

Ingeniers in the state of Aguascalientes. I was delivering a presentation and introduced Greg, his company and his connection with Blender. He came to the podium and introduced himself, “Hello. My name is Greg Schwietz. I am President of the United...” (silence and lots of internal laughs) ...After catching himself he then said 'President of L&M Construction Chemicals, Incorporated'. We have all been repeating that joke among ourselves for many years now.”

The Blender Group manufactures decorative concrete products for the concrete industry where they locally produce and distribute from Leon, Guanajuanto, Mexico. Blender also carries and stocks the entire L&M line which is produced in Omaha, Nebraska. Their customers span across Mexico and Central America.

Daniel continued, “Thanks to L&M, our business has been growing steadily over the years with a lot of international-commercial factories being built within 30-60 minutes of our distribution facility. Companies like Honda, VW, GM, Mazda, Pirelli, and others have decided to locate or expand their manufacturing capacity in Mexico making our business grow in leaps and bounds. Because Leon is located geographically almost directly in the center of the country, we enjoy an efficient distribution location for servicing our customers.”

Daniel's business partner in Blender is Omar Sanchez. Both Daniel and Omar are very close in the daily operations and sales duties. Cristo Rangel and Alex Rodriguez, employees of Blender, represent L&M and Blender products at the front end and bring a top level of customer service to their customers.

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www.lmcc.com
Field & Stream Durafloor HP
Installation & Polishing

Dick's Sporting Goods needed an answer to competitors Cabela's and Bass Pro Shops in the outfitting space. Field & Stream is that answer. Dick's management decided to retrofit an existing Dick's store into a new retail concept called Field & Stream. The project used much of the existing store architecture and structural elements as the framework for the new outfitter's look and feel. This retrofit is located in Cranberry Township, PA, just 18 miles north of Pittsburgh.

Craig Jared, the L&M regional sales manager on the job, says the existing floor was approximately 25 years old, and was hardened and densified with L&M's Seal Hard. "The existing substrate looks great," Craig said, "It is a testament to our fabulous Seal Hard product. There was nothing wrong with this floor other than 25 years of normal wear."

Since the floor owners wanted a different look from the existing substrate, Craig showed them L&M's polishable overlay and wear topping, Durafloor HP. Dick's management liked the idea of its quick turnaround time, its durability, and its polishing qualities. The owners gave them the go-ahead.

Project startup:
The Concrete Resource crew, under the direction of owner John Jared, showed up in Cranberry Township, PA, in early June and began grinding the existing floor, beginning with 30 grit metal segment diamonds. They then vacuumed, broomed, and washed the existing floor. Next, they placed 3/8-inch terrazzo strips, honoring the existing saw cuts. These strips acted as forms for pouring the Durafloor HP wear topping to the desired depth.

The next morning, Concrete Resource began mixing and applying L&M's Epoprime epoxy primer into place. Other crew members trailed those squeegeeing the bonding agent, broadcasting silica sand to refusal. After leaving the sanded
EpoPrime to cure, the next day, the crew vacuumed the excess sand from the surface.

Finally, it was time to mix and pour the Durafloor HP overlay. A “Strong” brand grout pump arrived on the job mid-morning. The 50 pound Durafloor HP bags were staged near the hulking pump, opened and the contents were loaded into the pump’s hopper. After a few minutes of mixing, the fluid, self-leveling Durafloor HP was pumped through a 1.5” diameter, 250 foot long hose onto the properly prepared and primed surface at a controlled pace. The hose and pump were manned by experienced personnel from Kent Construction, a concrete placement contractor from western Michigan.

As the Durafloor HP flowed from the pump through the hose, it was leveled with gauge rakes, working the overlay in a crosshatch pattern. The Durafloor HP self-leveled from there. The product’s high flow and long working time were notable. “This product has excellent flow and workability,” said John Jared. “And the fact that we can polish this within 24 hours if need be is terrific.”

The total pump placement time for the first section, approximately 12,000 square feet, was 2.5 hours. When asked how long it would have taken his team to place it using mixing buckets, Jared replied, “At least 3 days.”

Polishing the Durafloor HP overlay began a few weeks later. John and his crew began the FGS Permashine polishing process.

“We worked our way up the diamond chain, all the way to 800-grit resin-bonded diamonds, which was the finish Dick’s management wanted,” said John. “L&M’s LiON Hard and Vivid Dye were used to harden and color the concrete floors.

Dick’s Sporting Goods management liked the idea of Durafloor HP’s quick turnaround time, its durability, and its polishing qualities. The owners gave them the go-ahead.

From there, the floor really began to take shape. John said he loves it when they put down the final step, a light coat of Lumiseal FX which really causes polished concrete shine to pop. The results showed a vivid, durable and easy-to-maintain floor that the owners love.

Field & Stream opened in August, 2013.

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**Watch the Durafloor HP Videos:**

[www.youtube.com/user/lmccvideos](http://www.youtube.com/user/lmccvideos)

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www.lmcc.com
Understanding the windows of finishability can help avoid surface defects and costly call backs caused by premature or late finishing.

The window of finishability as defined by ACI 302.1R-04, “Guide for Concrete Floor and Slab Construction” is the time period available for finishing operations after the concrete has been placed, consolidated, and struck-off, and before final troweling (Ref. 1). The ACI 302 definition includes the finishing operations of bull floating, restraightening, waiting, power floating and troweling as shown in Figure 1. This window of finishability, established by the behavior of the freshly placed concrete, must be large enough but not too large so finishers have time to achieve the desired floor flatness and surface finish.

In addition to the ACI 302 window of finishability, there is a second or “true” window of finishability as shown in Figure 1 (Ref. 2). It starts when the bleedwater sheen has disappeared and the concrete has stiffened sufficiently to support the weight of the finishers. The ACI 302 and the true window of finishability both end before the final troweling or when the concrete has hardened so that restraightening or manipulation of the surface mortar is no longer possible. As with the ACI 302 window, the size of the true window of finishability is also established by the behavior of the concrete.

To avoid finishing defects on steel trowel slabs, finishers must understand and deal with both windows of finishability, especially the true window of finishability.

Premature Finishing

Typically, the terms “premature finishing” and “late finishing” are associated with the true window of finishability. Premature and late finishing occurs when the power floating starts too soon or too late. Starting too soon may cause surface defects including premature surface wear, crazing, dusting, blistering or delaminations. If power floating starts too late, the surface mortar may become too stiff for finishers to achieve the desired floor flatness or surface finish.

Establishing the proper time to start power floating is based on the depth of a finisher’s footprint. However, many finishers do not judge concrete stiffening with the depth of a footprint because footprints are too hard to repair and may reduce floor flatness. Instead they use their fingers to press on the surface.

Do not start power floating until bleedwater has stopped rising to the surface, the bleedwater sheen has disappeared, and the concrete has stiffened sufficiently to support a finisher with no more than about a ¼ in. footprint indentation. Otherwise, bleedwater may be finished into the top surface or the surface may be prematurely sealed. As shown in Figure 1, waiting is an official finishing step.

Mixing bleedwater into the surface typically results in a weakened top surface prone to premature surface wear, crazing, and dusting. Sealing the surface prematurely traps rising bleedwater and air bubbles just below the surface and typically causes surface blisters and delaminations to occur.

Finishing bleedwater into the surface

Bleedwater is extra mix water that rises and collects on the surface of the concrete when the bleed rate of the concrete exceeds the surface evaporation rate. Finishing bleedwater into the surface typically increases the water to cementitious material (w/cm) ratio along the surface which decreases the surface strength of the concrete making the surface more prone to premature wear.
If surfaces have stiffened or hardened sufficiently for power floating but the bleedwater has not evaporated, drag a rubber or compressor hose across the surface or use a floor squeegee to remove the water. Also, do not add and finish water into the surface to facilitate finishing because the surface has dried. Finishing “added” water into the top surface has the same detrimental effects as finishing bleedwater into the surface.

Dusting is the development of a fine powdery material consisting of water, cement and fine particles that easily rubs off the top surface. Mixing bleedwater or “added” water into the surface dilutes the mortar phase of the concrete and creates a thin, weak layer of mortar called laitance along the top surface.

Crazing is the chicken-wire-like pattern of fine cracks that are barely visible and sometimes only visible when the concrete is drying after the surface has been wet. Since crack depths are very shallow, this form of surface cracking is primarily an aesthetic concern. Crazing seldom creates structural or serviceability issues, even for floors exposed to heavy forklift traffic. Crazing is caused by minor surface shrinkage related to rapid surface drying and/or wetting-and-drying cycles.

**Trapping bleedwater and air**

When mix water migrates upward because the cement and aggregate particles are settling, the surface must be “open” so as not to trap the rising bleedwater and air bubbles.

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**Construction Steps for Steel Troweled Floors**

<table>
<thead>
<tr>
<th>Construction Steps</th>
<th>Time (Hours)</th>
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<tbody>
<tr>
<td>Placing</td>
<td>1</td>
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<tr>
<td>Strike-off</td>
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<tr>
<td>Bull Floating</td>
<td>1/2</td>
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<tr>
<td>Restraightening*</td>
<td>3/4</td>
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<tr>
<td>Curing</td>
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<tr>
<td>Sawing Joints**</td>
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<tr>
<td>Power Troweling</td>
<td>1</td>
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<td>Restraightening*</td>
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<td>Power Floating</td>
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<td>Figure 1. The true window of finishability starts after the waiting period or after the bleedwater sheen has disappeared and the concrete has stiffened sufficiently to support the weight of a finisher. Essentially, the true window of finishability is a smaller window within the ACI 302 window of finishability. (Modified from Ref. 2)</td>
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directly beneath the top surface (Photo 1 previous page). Trapping bleedwater and air creates a thin, weak zone directly beneath the surface and results in surface blisters or delaminations (Photos 2a-c: previous page and photo 3: above). Blisters and delaminations typically form during the onset of troweling. Blisters, typically about 1/8 in. deep, range in diameter from 1/4 to 4 in. Whereas, surface areas for delaminations are larger and can range from a few square inches up to several square feet or more and have depths varying from about 1/8 to 3/8 in.

The easiest way to identify surface blisters and delaminations is by sounding or dragging a heavy, steel chain across the surface or sounding with a hammer (Photo 4). As the chain crosses over surface blisters or delaminations, a dull pitch or hollow sound occurs indicating the top surface is not completely attached to the underlying concrete.

Premature sealing often occurs when the top surface stiffens due to surface drying or the top surface is setting faster than the underlying concrete. Top down setting often occurs when the ground temperatures are cool but the ambient conditions are warm and sunny. When this happens, flatwork finishers mistakenly believe the slab is ready to be power floated or troweled. However, the bleedwater and air bubbles are still rising. If the finishers seal the surface prematurely, then rising water and air bubbles become trapped beneath the surface.

To offset early surface drying and top down setting, plan ahead and be prepared for these situations. Use water foggers and evaporation retarders to avoid early surface drying. Offset top down setting by warming the base material or accelerating concrete setting with chemical admixtures. Be aware of these challenging conditions and do not seal the surface during bull floating or restraightening and wait until bleeding has ceased before power floating.

**Late Finishing**

Waiting too long to start power floating and troweling may result in unacceptable floor flatness and surface finishes. Premature finishing can lead to costly surface defects. The finishing challenge is hitting the true window of finishability regardless of the changing and adverse placing conditions.

Be prepared to adjust the concrete mix design (e.g., chemical admixtures) and finishing operations including timing and concrete protection so the finishing operations falls within the windows of finishability. To overcome the finishing challenges and consistently produce high quality and defect free floors you must understand the windows of finishability, especially the true window of finishability.

**References**


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Don’t Miss L&M On YouTube

We’ve been busy producing new concrete videos for our customers at L&M. You asked us for more How-To install videos. We listened and took action. We broke out the video gear and began capturing footage from various jobsites across the U.S. featuring L&M’s concrete products.

What’s in it for you?

How about tips and best practices for installing our concrete treatments you know, like and trust? We produced our videos with you in mind. As everyone knows, nothing explains How-To better than video. It is the next-best thing to being there. But with video, you get to watch it as many times as you wish, until you have it down pat.

Now, you see the install close-up, in vivid HD—without having to install it yourself first. These videos will give you the confidence you need to make your next installation of L&M’s products a success!

Go to www.youtube.com/user/lmccvideos and check out our latest additions from the past few months. You'll find videos for installing Durafloor HP, EmeryTop 400, and Aquapel, just to name a few.

Don’t forget to Subscribe to our L&M YouTube Channel so you get notified whenever we upload a new video.

Be sure to add to the conversation on our Facebook page. Or feel free to email us at info@lmcc.com with your video suggestions. We love hearing from you.

Here’s where to find us!

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Harley Low-Rider Passes Away

It brings us great sadness to state that L&M Construction Chemicals’ Omaha plant manager, Fred Little, has passed away. He was 51.

In May of this year, Fred suffered a heart attack while at work. While walking through the plant from his car to his office, he felt lightheaded and dizzy. Local EMTs were called and they took Fred to a local hospital.

Arriving in good spirits, doctors examined him and determined that he’d suffered a mild heart attack. More alarming, further tests revealed dangerous blood clots. To eliminate the threat these blood clots posed, the doctors prescribed TPA, a “clot super-buster” drug. Despite the medication, the clots mobilized and unfortunately one went to his brain, creating a stroke. He became unconscious thereafter.

After more evaluations, a neurosurgeon stated he would operate to remove the clot. This was not without great danger, but Fred’s family decided to move forward.

The operation, while successful in removing the clot, paralyzed the entire right side of his body. In addition, he lost his speech capabilities.

Despite his best efforts at rehabilitation, Fred’s physical and mental condition deteriorated rapidly in mid-October, culminating in his passing.

Fred Little was with L&M for over 25 years, since the early days of production. Fred grew up on an Iowa farm and maintained that fantastic Midwestern work ethic. He expected the same from his coworkers. Always ready with his quick wit, he let you know how he felt, especially if he believed an effort to be sub-standard. Fred never held a grudge. You always knew where you stood with Fred.

Fred became the Omaha plant manager after many years of continued service, and his time in that position helped make L&M Construction Chemicals a World-Class operation.

We will miss him greatly. God bless him and his family.
The following is a Q&A interview I had recently with polished/decorative concrete contractor, Roy Bowman, chairman of the CPAA and one of the visionary owners of Concrete Visions. Jim Vlcok, Editor-in Chief

**JV: What was your pathway into the concrete industry that led you to become one of the most respected polished and decorative concrete installer-contractors in the US?**

**RB: “I first started in the concrete industry with surface prep equipment in 2000 and did my first polish job in 2002. A friend of mine said L&M had a chemical that would harden concrete and last forever. I called Mike Tucker, the regional sales rep for L&M and he said they had what I needed. So I did my first diamond ground polished floor with their product way back in 2002. Nobody told me that I had to scrub it off when it was done or that the floor would turn white and blotchy. Needless to say, I had to go back and re-polish to fix it. I made very little profit on that first floor, but it taught me some important lessons in this industry. It was that job that officially launched me into the concrete polishing business.

In 2004, I started Concrete Visions with the help of a good friend who's still my business partner, George Gooch. We began polishing 30-40,000 sq. ft. a year. Now we've had years where we have completed more than 700,000 sq. ft. Looking back at the early years, I can say it all followed a weird progression. Having a floor prep company long before starting Concrete Visions, I learned about the advantage of polished concrete because of doing the surface prep. We would prep, and then in four or five years re-prep a floor for epoxy coating. After I did that first polish job, I started preaching about the advantages of diamonds rather than epoxy. I then started to get more and more jobs. It was by the grace of God that we did a good job, did the floor right, and within a year we were doing bigger and more significant jobs. We evolved through the painful learning process and now those types of old jobs that we struggled with are now a piece of cake for us. The first couple of years I thought we were going to starve to death. Finally, we started making money and things took off from there.”**

**JV: Where do you see the polished and decorative concrete business evolving into over the next 5-10 years?**

**RB: “The polished concrete business is expanding rapidly. It is the goal of the Concrete Polishing Association Of America (CPAA) to elevate this side of the business to new heights. As the chairman of the CPAA board of directors, I have to say the CPAA has done a lot to develop specifications, technical guidelines, and the development of definitions that reach across an entire industry and are not specific to only one manufacturer's product. A lot of folks have worked hard to make that happen, but probably none as much as our executive director, Brad Burns. It is because of that that we have seen a lot of growth in the overall amount of floor coverage that we do, plus a lot of growth in polishers.

There's a trend right now that anybody who can afford to buy a grinder is a polisher even without training. My concern for this industry for the next five years is too many untrained professionals who are trying to polish concrete and fall far short of being professional. I hope for all of us that this trend doesn't hurt the industry. On the chemical-product side, I have seen a lot of changes and growth with the manufacturers and their products which gives us as contractors a lot more tools to work with. As all of us know, it not only takes a true professional to do the job, it also takes the right products; products that actually work. L&M's products, FGS, SealHard, LionHard are all excellent products. These products have all evolved to meet the demand of the industry, and as the years progress, they make this industry better with more selection and a better end result. We still have a lot of room for growth. There are a lot of others competing for the floor covering dollar—tile, carpet, epoxy, coatings, etc. That's why it's important to develop and maintain an association to continually improve what we do.”**

**“Like artists, a great polished concrete floor is only as good as the 'canvas' we start with.”**

** JV: In order of importance, what are the main obstacles to overcome for polished concrete installers when communicating with floor owners?**

**RB: “On every new construction project, we provide the owner or architect with all the data and requirements for placement of a good substrate to work with. Like artists, a great polished concrete floor is only as good as the 'canvas' we start with. If we get a really bad slab of concrete, it could cost more money to fix it than it's worth. For instance, if they want a beautiful, clean polish but we have to start with a wavy floor that doesn't meet a ff-50 flatness level; you'll get a lot of aggregate exposure that the owner is not going to be pleased with. If they have a rumpled-up slab and they're looking for a real uniform stain color, the finishing process will leave blotchy areas. Because all the coloring dye products are translucent, those blotchy areas will still be there; they'll
just be lighter or darker. We are always honest with the floor owners; we mention these things in the up-front meeting. Sometimes they just don’t want to hear it though; they think we are miracle workers.”

JV: As the name of your company implies…where will Concrete Visions position its major emphasis for the future?

RB: “I wish I had a good answer for that, but we’ve expanded into doing a lot of polished floor overlays on floors that could present problems. We have also expanded into a lot more decorative work, not just commercial, straight-up ‘grey’ polishing. We are very adept and well known for placing multiple colors on floors. I think Concrete Vision’s biggest goal is to set our sights on building the company slowly to a medium size level. Right now, we have a total of 10-14 employees, but it fluctuates. A good, manageable goal for us would be 20-25 employees. I don’t really aspire to be a large, national company. I want to be able to service my customers with a high degree of professionalism and top quality service. Another goal for our future is the ‘maintenance’ side of the business, providing an option for our customers to do the maintenance for them. It’s not what we really want to do, but a lot of maintenance companies out there either don’t know how to properly clean concrete floors, or they don’t care to get into this side of the business plus the fact that they’re not getting paid to wax the floor now.”

JV: In a nutshell, what are the three major strengths that separate Concrete Visions from your competition?

RB: “Number one: Attention to detail.  
Number two: The willingness to solve problems if they happen.  
Number three: Flexibility.”

JV: What words of wisdom would you like to send to your counterparts in this industry?

RB: “I would like them to continue to educate themselves on polished concrete craftsmanship, the products and proper use of products, on the industry and products as they change. Also, to be careful of unrealistic expectations that they give the customer about the floor. Deliver the expectations honestly and properly so that there are no surprises with the end result.”

JV: What encouraging words can you give to other contractors in this business?

RB: “You never lose money on jobs you don’t do. Don’t bid the jobs too cheap. Get the value for what you’re doing. Too many of my competitors have gone out of business by not managing this properly. The industry is growing year-after-year. Owners see the value in what we’re doing. If we set our values to do the best jobs we can, we won’t have to worry about the competition.”

JV: How important is the word “Professional” to you and your company?

RB: “Extremely important! It's imperative that we project ourselves as a professional company. Not all companies have done this and they've gone out of business. Our employees show up in clean uniforms with our company logos. We always keep our equipment to a high level of maintenance. We attend all of the safety meetings. We keep our vehicles clean and our job sites impeccable to the best of our ability. We also try to work professionally with the other subs on the jobsite, and respect the work that they do as well. This kind of attitude has kept us in the game as a ‘preferred contractor’ to the general contractors. Show up on time, do what we say we’re going to do, and clean up after ourselves. We’re not going to fight with the other sub over what’s right or wrong. We’re not going to be a liability to them on the jobsite. We want to send a good feeling to our customer, whether they are the GC or the floor owner.”

JV: What are you personally doing to grow your business in the future?

RB: “Right now, I’m spending a lot of time and effort with the CPAA. Giving you an analogy, currently, the industry is about like a ‘medium pizza. If I get only one slice (one company) it’s a pretty good slice. But, if I can grow the industry/involvement through awareness, educational involvement, etc. with the floor owners, customers, architects, specifiers, designers, engineers, etc. I expand the industry. If I make the industry grow, the pizza gets bigger and my slice gets bigger as well. I strongly feel that that pizza will get exponentially bigger as this industry grows. I also know there will be more slices in that pizza and that'll be good for all of us.”

“If we set our values to do the best jobs we can, we won't have to worry about the competition.” — Roy Bowman
The American Society of Concrete Contractors (ASCC) is a non-profit organization dedicated to enhancing the capabilities of those who build with concrete, and to provide them with a unified voice in the construction industry. Members include concrete contracting firms, manufacturers, suppliers and others interested in the concrete industry such as architects, specifiers and distributors. There are approximately 475 member companies in the United States and eight foreign countries.

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For more information, visit the web site at www.ascconline.org or call toll free 866-788-2722
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Don’t replace it. **RAP** Resurface And Polish it.

**Why polishable concrete overlays?**

Pitting. Pop-outs. Scaling. Spalling. Excess cracking. Delamination. Patching all over the place. Those in the concrete business are all too familiar with these concrete problems. While concrete is a fabulous building material, it is not without its flaws. Years and years of foot traffic, impact, and abrasion can really take their toll on a slab. It can only take so much before these surface issues arise. Say a retail floor owner desires a polished concrete floor, but the existing substrate is patched and repaired beyond desirable aesthetics. Experienced polishers know those results won’t match the owner’s expectations. What other recourse does the floor owner have if they want a highly-refined surface?

Enter polishable concrete overlays. Cementitious overlays are designed to top these concrete problems after they’ve been addressed. A seasoned concrete polisher knows when an existing substrate is not a good candidate for polishing. A proficient polisher also knows that he can give the floor owner options, one of those being polishable overlays.

**How do cementitious overlays work?**

These cementitious materials are mixed like regular concrete. They feature extended working time, high compressive strength, and may be polished 24 hours after placement. Concrete contractors love them because of their working time and ease of use. Owners love them for their refined, aesthetically pleasing look, not to mention they’re durable and easy to clean. In applications where there are multiple locations, such as in retail, polishing contractors can deliver a consistent look and feel for all store locations.

L&M Construction Chemicals proudly offers two polishable overlays: Durafloor HP and Durafloor TGA.

**Durafloor HP**

Durafloor HP is a high-strength, self-leveling concrete overlay that can be placed at various thicknesses, ranging from 3/8th” to 2”. Durafloor HP can be dyed using L&M's Vivid Dye and polished using L&M's fgsPermashine Polished Concrete System. You can also add decorative aggregate to the overlay. For a project profile featuring Durafloor HP, please read our Field & Stream Durafloor HP Installation & Polishing article on page 4.

To learn more about Durafloor HP, please visit: lmcc.com/products/durafloorhp.asp

![Close-up of Durafloor TGA](image)

**Durafloor TGA**

Durafloor TGA is a decorative, exposed aggregate polishable overlay. This product is all about the look. Floor owners see this and they get it immediately. With a rapid set, Durafloor TGA is poured at 3/8th” to ½” thick, cured, then polished using L&M's fgsPermashine Polished Concrete System. Durafloor TGA has numerous applications, typically wherever the floor owner desires an attractive, decorative, durable, exposed aggregate concrete floor. Examples are commercial lobbies, institutional floors, retail, schools, and theatres.

To learn more about Durafloor TGA, please visit: lmcc.com/products/durafloortga.asp

Whether you are a floor owner or a polishing contractor who desires a solution to existing substrates that are not good candidates for polished concrete due to surface issues, you just found the answer in polishable overlays. If you’re a contractor and run into excess patching and pitting, simply sell the floor owner on a polishable overlay product. These cementitious products provide quick installation, durability, beautiful aesthetics, and polishable qualities.
According to ASTM C-309, the proper curing of concrete is “the control of moisture loss and temperature of freshly placed concrete.” Let’s break this down into two parts: Moisture loss and temperature.

Most mix designs contain approximately twice as much water as needed to fully hydrate the cement in the mix. This excess water is often referred to as water of convenience. Water of convenience helps make the concrete come down the chute and aids in its placement. After placement and finishing, this excess water has to go somewhere. If the water escapes too rapidly the cement particles do not have a chance to fully hydrate. Rapid drying causes strength loss, especially at the surface. Proper curing prevents this rapid loss.

Curing also relates to controlling the temperature of the freshly placed concrete. This means that we are trying to simulate keeping the concrete at approximately 70 degrees. This is done in several ways. Shading the concrete from a hot sun is usually impractical however, white pigmented, (Type 2), curing compounds reflect the sun’s rays and help keep concrete cool. Wet cure blankets are also used for this purpose. In cold temperature concrete work, the use of insulated blankets on the surface until the concrete reaches sufficient strength to resist freezing is often necessary.

Curing compounds were invented to reduce the cost of curing as well as increasing the flexibility of job site activities. Good quality curing compounds, properly applied, will allow moisture to slowly escape through a thin membrane thus ensuring effective curing. Cure & Seal products are made from acrylic or acrylic blended resins. These multi-function products cure the concrete as well as offer some long-term sealing protection from the elements.

Common Mistakes

Scaled exterior concrete is usually attributed to either no curing or improper curing; “Improper” meaning the wrong curing choice for the conditions of the job. In areas of high freeze/thaw weather, the concrete must be allowed to de-water prior being exposed to freezing weather. Usually, this means using a 3-day blanket cure after October 15th, followed by a period of air drying. Penetrating sealers such as Aquapel which protect the slab from de-icing salts can then be applied after a 14 day air drying period.

Controlling rapid moisture loss during the placement process is equally important. Frequent use of E-Con evaporation retardant will help retain valuable moisture during hot or cold weather, low humidity and/or windy placements.

Occasionally I hear, “I don’t need to use a curing compound, I burn all of my floors really tight.” Frankly, I’ve heard this far too many times and it is simply not true. Tight troweling does reduce moisture loss but it also weakens the paste strength at the wear surface.

I also hear this one, “I only use a curing compound when it’s below 70 degrees. If it’s warm enough, you don’t need one.” Huh? Are you joking? Hot weather is when you really need the water retention of a good curing method.

What to use and when to use it....

This guide will help you in choosing the right L&M Curing product for the job.

Curing Compounds

- L&M Cure “R”: You can never go wrong selecting this dissipating resin cure, inside or outdoors. After providing good curing protection over a period of time, it can be easily removed after the curing process allowing penetrating sealers such as Aquapel, Seal Hard, etc. to be applied.
- Cure W2: Highly recommended for exterior concrete pavements to control hot weather issues.

Curing and Sealing Compounds

- Dress & Seal does most of the heavy lifting for L&M. It is our most popular cure & seal product. It can be used both inside and outdoors.
- Dress & Seal 30 is a UV stable, high solids for that tough, high shine cure & seal.
- Lumiseal Plus is a 100% pure acrylic that is typically used on stamped, colored concrete to bring out the character of the concrete. Totally UV stable.
- Lumiseal FX is the most unique product we offer. It is a water based, pure acrylic cure & seal that can be used on its own or over previously applied sealers. It leaves a pleasing medium gloss finish or can be burnished to a deep shine. It will allow concrete to breathe more than other sealers and does not blush white when exposed to water.
The Common Cure: Questions and Answers

All of the cure and seal products listed are available in both solvent based or water based formulas except Lumiseal FX.

Curing & Sealing...What’s the difference?

Curing compounds, blankets or wet curing helps hydrate the cement particles in order to develop stronger paste. This is usually referred to as a 28-day process.

Cure & Seal products cure the concrete and leave a tough membrane of acrylic resins on the surface and some penetration into the pores of the concrete.

Sealing concrete from the elements and heavy usage presents quite different challenges. Let's break this down into two categories: indoors and outdoors.

Exterior concrete is often exposed to de-icing salts, acid rain, and all sorts of spills and stains. To truly protect it from weather damage, we recommend applying Aquapel to the surface after the curing process is complete. This is quite easily done using a simple garden type, hand pump sprayer.

For a quick lesson on how to apply the product and see the results, go to lmcc.com and click on “You Tube,” Click the Aquapel “how to” and watch this short video.

Indoors, we are faced with ugly tire marking, high abrasion and spills of all types. Membrane forming or topical products actually make the problems worse so we try to avoid their use and think more towards penetrating products.

Seal Hard, Chem Hard and Lion Hard are our three silicate based products. These liquid hardener products are typically called “densifiers.” They chemically react with the weak calcium hydroxide in the concrete, producing Calcium Silica Hydrate (CSH). Through this reaction, the pores and capillaries in the concrete are then “filled” so that the treated slab will resist fluid penetration as well as unsightly micro pitting (dusting) of the surface.

In applications where there are often oil spills or leaky vehicles, we offer a companion product to our densifiers called Petrotex. This, too, is a penetrating product. Treated concrete surfaces become oil phobic, greatly reduce oil staining of the concrete. It is typically spray applied over a surface that has been treated with Seal Hard, then leveled using a micro fiber applicator. On polished concrete, Petrotex can be burnished using a high-speed machine to enhance the shine of the floor.

The Unsolved Mysteries

I’m frequently asked “how soon can I put Seal Hard down on a floor?” I am wondering, is there a race out there to see how soon you can do something wrong? Why would you want to rush things and skip good curing practice? Wouldn't it make more sense to use the dissipating Cure “R” and build the building to substantial completion, then clean and then finally seal the floors? The more mature the concrete is, the more effective densifiers are. Don't rush it. Normal wait time for Seal Hard is 7 days after placement. Three days minimum is required in critical fast-track situations.

Some manufacturers falsely state that their silicates will “cure” the concrete. This is far from the truth and ASTM and ACI strictly prohibit stating that they do. Still others have “single step” type products where they blend silicates with resins and promote that they “cure, harden and densify” in one application. Miracles do happen, but not usually in concrete. Remember this advice: paper does not refuse ink. One can say or state anything on paper but that does not necessarily make it so. There is simply no good substitute for doing things correctly using proven methods.

We hope this helps clear up some of the mystery behind why and how we cure. Make sure to visit our website.

Bill Butler is a sales and tech rep for L&M Construction Chemicals. He has worked in the concrete industry since 1976 and has been involved with ready mix trucks, concrete admixtures and construction products for the concrete industry. His approach to helping contractors and installers “do things right the first time” or when necessary “doing things right the second time” is to ask good questions, be thorough, use common sense and logic.

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Find answers to your questions:
Did you know that there are ConcreteNews articles dating back to the year 2000 online? (That’s a lot!) Search articles by keywords and get the concrete answers you need anytime, anywhere. Get them all at www.lmcc.com/concrete_news
Find the ‘Prez in the Pizza’ to Win an Apple iPad Mini!

The election results are in for ASCC and Mike Popoff is the new President. He’s also one of the toppings on this new specialty pizza. Find the hidden picture of Mike (See pg 15) in the photo below. Give us Mike’s coordinates (Like A-1 or B-17) to be entered into the random drawing of correct answers.

Put your answer on the reply card and mail it to us or enter online at www.lmcc.com/contest for your chance to win a brand new 16 gig Apple iPad Mini.

Random drawing of correct answers to be held on December 13 2013. (If you don’t win the iPad, you might be 1 of 2 lucky Omaha Steaks winners!)

Enter with the enclosed reply card or online at www.lmcc.com/contest

Find the Prez in the Pizza!