

1961

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# FIFTY YEARS

2011

Aquapel Aquapel Plus Chem Hard Citrex ColorFast Crystex Dress & Seal  
Dress & Seal 30 Dress & Seal WB Dress & Seal WB 30 Duracrete Durafloor  
Duragrout Durapatch Hiway Durapatch Industrial Duraplug Durathin Patch  
Duratop E Z Strip E-Con Emeryplate ff Emerytop 400 Epobond EpogROUT  
758 Everbond Everweld Fastrack **Debond** FGS Conditioner FGS Hardener  
Plus Fluo Hard Grip It Grip It AO Hydra-bind Hydro Pel Hydroblock Joint Tite  
750 L&M Cure L&M Cure R L&M Cure R2 L&M Cure W L&M Cure W2  
Levelex Lion Hard Lumiseal FX Lumiseal Plus Lumiseal WB Lumiseal WB  
Plus Pentox 50 PERK! PermaGuard SPS Petrotex Quartzplate ff Quartzplate  
Light Reflective Seal Hard Vivid Dye Vivid Dye WB Plus

L&M Construction Chemicals, Inc.

Better concrete. Better world. sm

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## The President's Corner

—Greg Schwietz, President,  
L&M Construction Chemicals

### *Fifty years in business is hard to fathom.*

Initially, my thought for this President's Corner article was to parade in front of you, my interested reader, the many "product" firsts and industry standards that L&M has been a part of over the past 50 years. There have been many. I am most grateful to my father, Larry, for instilling in this company the character to bring notable products to the market, products that added to the collective concrete construction good and in some way benefited it. Of course, having been professionally present for 35 years of its 50 years existence, I know personally many of the struggles and accomplishments that this humble company, founded in 1961 by Larry and Marilyn (L&M) Schwietz, has made over the course of these many years in that spirit.

While I am still, even now, tempted to rattle off a list of "firsts" and "remarkable" and "standards," I reflect that what I am most appreciative, quite simply, is the PEOPLE who have marked their time with L&M as co-workers, as customers, as friends or just interested parties, ones who needed our expertise or products for a short time.

It is our fundamental belief that people buy from people. Of course factors such as price or specification dictate the potential for sale, but, in my experience, much happens simply by showing up. It can make the difference between a single sale or what may be the beginning of a long term business and personal relationship. Easily, my mind fills with images of people, encounters — most pleasant, some not so — large groups, small firms, all part of the collective experience in this industry we call construction.

One of the intriguing parts of being in the concrete business is that we are in a very interesting business. Concrete is a tremendous, complicated, and worldwide building material. We aren't selling buggy whips here, my friends. We are in a very fundamental business of building the infrastructure of the world, the palaces of kings, and providing the very basic necessities of the rest of the world's population. And it makes me proud that some of my industry friends are planning and working on grand projects, using concrete, which will serve generations around the world.

So, for YOU ALL I am truly grateful. Thank you all for helping L&M get to this magical land mark. Fifty years — and here's hoping for 51. We will never take it for granted

Better concrete. Better world.

  
 Greg



Twenty-five years ago, John Londerville founded a small structural steel company in Wausau, Wisconsin. Through hard work and being in the right place at the right time, he carved-out a successful steel company that grew and grew over the years. In the early years, John bought new and used flat stock and structural steel...then resold the product to regional steel erectors. In most cases, John was able to beat most of the areas steel pricing because of his contacts and long lasting relationships with just about everyone his business touched.

Fast forward the clock to 2006. Londerville Enterprises called Jeff Zimmerman who had many years of experience in the concrete business to form the concrete construction side of the company. Jeff commented, "The whole concrete business for us evolved in only a week or two! Don and Jeremy Londerville contacted me about heading this up. In



In Celebration of  
Our 50th  
Anniversary,  
L&M Construction  
Chemicals adopts  
new slogan.  
Better concrete.  
Better world.



## From Steel To Concrete...

# Londerville Enterprises Forges Successful Relationship With L&M Construction Chemicals

By Jim Vlcek,  
Editor in Chief

my previous life, I knew L&M's regional sales manager, Craig Jared. Craig called L&M President, Greg Schwietz...and within a week or so after all this, we became a certified L&M distributor. It was a slam dunk ride! I was impressed with L&M's ability to respond quickly and relate to our needs. Greg and company made us feel we were an important partner in their success!"

Jeff continued, "Before L&M came aboard, we actually had a couple other concrete chemical companies besides L&M trying to court us, but they simply weren't committed or willing to give us the consistent support we needed as a small and growing company. Between Craig Jared and Greg Schwietz, we now enjoy a super and mutually workable and profitable relationship. Craig understands our needs and he is always there when we need him! We're pretty much are a full-line L&M distributor and increase our stocking levels year-after-year. We move a lot of L&M Dress & Seal, Aquapel Plus, Lumiseal, Seal Hard, FGS PermaShine, as well as most of their other products. We know L&M products work for our customers and the quality and consistency is always there!"

Jeff went on to say, "Soon after we struck the partnership, L&M also made sure we were quickly whisked down to their distributor school in Omaha for intensive product training. I will never forget my first contact with L&M at this school...(the late) Byron Hanson, L&M's technical back-up and field representative greeted and welcomed us with the warmth and friendliness as only Byron could do. Following about 30 minutes of Byron's unique story-telling, I knew this meeting was going to be fun and informative! We came back to Wisconsin with a wealth of concrete construction product information. Our



Jeff Zimmerman in the Wausau, WI office

growth with L&M has been very rapid and very successful. L&M has played an important role in Londerville's rapid growth."

Along with Jeff, Londerville's concrete products division consists of Don, Jeremy and Randy. Due to their rapid growth over the past two years, they have opened a new 30,000 sq. ft. warehouse and office facility in Wausau.

Their business services a wide scope of concrete construction customers and projects in and around the Wausau region providing contractors in the venues of commercial, government, schools, commercial and industrial floors, retail, water treatment, hospitals, law enforcement and more.

To learn more about Londerville enterprises, you can log on to their website at [www.londervillesteel.com](http://www.londervillesteel.com) Their direct phone in Wausau is 715-675-4800.

Project: Dallas Rapid Transit System  
Project Type: Public Transit  
Location: Dallas, Texas USA  
Grout Installer: Grout Tech, Inc.  
Project Owner: DART, City of Dallas  
General Contractor: McCarthy Construction.  
Specifying Engineers: Bridge-Farmer Assoc.  
Grout Supplier: L&M Construction Chemicals

**Project Specifications:**

Total number of columns: 233  
Type of columns: Cast in place concrete pillars with pre-cast concrete caps  
Grout placed: Between the columns and the top caps  
Total grout used per column: Approx 12 cubic feet  
Total grout used: ¼ million pounds  
Grout specified and installed: L&M CRYSTEX High-performance, Non-shrink Grout

L&M Texas Regional Sales Manager:  
Mike Tucker (214)415-6170

Crystex Grout

Non-Shrink, Non-Metallic, Precision Structural Grout

Product Description: CRYSTEX is a long work time, ready-mixed, high strength, highly fluid, controlled expansion grout with superior dynamic load stability.

CRYSTEX contains a balanced blend of washed and graded aggregates, portland cement, plasticizing agents, and a proprietary shrinkage compensating system, which guarantees controlled positive expansion in all directions. The positive expansion remains constant throughout the life of the grout. CRYSTEX is scientifically proportioned and ready for use at any consistency from plastic to fluid.

Unique Properties: CRYSTEX provides unique placement properties of extended flow and long work time. Over 60 minutes of "work time", facilitates placement of a superior performing grout in the most unfavorable of placement conditions. Extended placement time is important in many cases, including: high-temperature applications, difficult to reach cavities, installations by grout pump, base plates with lateral shear keys, and large grouting cavities that require continuous placement of over one hour.

Basic Use: CRYSTEX is used where precision, nonshrink, high-strength, structural grout is required, such as: heavy equipment machinery bases, crane rails, pump and equipment bases in power plants, steel and paper mills, sewage treatment plants, keyways, bed plates where heavy repetitive loading occurs, anchor bolts and dowels, structural steel columns, bearing plates, load bearing masonry walls, light poles and highway signs.

Features and Benefits:

- Long-work time, easy placement.
- High strength.
- Can be mixed at a wide range of consistencies.
- Dynamic load stability.



Just a few of the hundreds of concrete support columns on the "Green Line" requiring L&M's high-performance Crystex grout.



One of the Dallas "Greenline" terminals scheduled to be completed in the fall of 2009.

Easy to place and easy to trim...makes L&M's Crystex the grout of choice for engineers and millwrights wanting the best load-bearing performance available!

L&M CRYSTEX Grout Chosen for New \$750 Million Dallas Rapid Transit System Project

The Dart Corporation has chosen L&M's CRYSTEX, high-performance, non-shrink grout to support the precast elevated rail pillars in its new "Green Line" rapid transit system project. Grout Tech, Inc. Dallas was the chosen installer to place the high-strength CRYSTEX.

The first phase of a 3-year rapid transit upgrade has 233 huge, cast-in-place concrete columns with pre-cast concrete caps. The "Green Line" phase is planning an opening for fall of 2009. The trimmable CRYSTEX grout will fill the void between the concrete columns and the top concrete caps...encasing the bolt sleeves. The project will cover over 14 miles of track with seven station terminals. Estimated total project cost is over \$750-million.

The Greening of Dallas

Just as "green" is the color of growth, The Greenline is a symbol for all Dallas citizens for growth. Access to the north side of the city is on the move! The new Dart Rail Green Line will connect communities far and wide all the way from Pleasant Grove and downtown Dallas to Farmer's Branch and Carrollton.

In just a few short years, Dallas citizens will be able to ride the Green Line from their community to all their favorite work and play destinations. Whether they're headed to work downtown, Baylor, the Southwestern Medical District, or the Siemmons Corridor the completed Green Line will keep them all connected 24/7.

L&M Construction Chemicals is proud to be part of this meaningful growth in the city of Dallas!



By Jim Vlcek,  
Editor in Chief



Jim has been the  
Editor-In-Chief of  
Concrete News since 2000

## the Contractor's Soapbox



**Mario Garza**  
Barton Malow Company

**Jim Vlcek (JV):** *Tell me about Barton Malow... Explain your company's niche' in your market place. Explain the scope of your market place.... Where do you do most of your concrete jobs?*

**Mario Garza (MG):** Barton Malow Company provides a wide variety of construction services to clients including construction management, design-build services, and general contracting. These services are provided in the manufacturing, education, health care, sports, and energy markets.

Within these markets, Barton Malow is able to provide concrete self perform services to its clients. Our concrete services are primarily focused in heavy industrial structural concrete. We self perform all facets of concrete construction including formwork, reinforcing steel fabrication and installation, placement, finishing, and post-tensioning. Our concrete services are primarily performed within the Great Lakes region in what are commonly referred to as the Big Ten states. However, we do venture outside of this geographic region to support other divisions of Barton Malow Company, most notably in the energy sector. Barton Malow Company is actively pursuing renewable energy projects across the country, especially in the wind energy market.

**JV:** *Mario, using this "Contractors Corner" soap box as your personal sounding board for all concrete contractors, design professionals and specifiers, and other concrete professionals, what are some of the important things you'd like to tell your peers based on your many years of experience.*

**MG:** As self perform contractors, we must manage a number of risk factors on a daily basis. As we review the problems that arise on projects from a production, quality, and safety perspective, we find poor communication to be the primary cause of most of our problems. This includes communication problems from the owner to the project team, project manager to superintendent, and superintendent to the foreman. The most important thing we must do on our projects is communicate. This includes

- Job kick-off meetings with owner, project team, and subcontractors.

- Pre-placement meetings for all major placements.
- Mock-ups for all specified finishes including exposed concrete and specialty slab finishes.

In addition, we actively work with our clients to help them apply design-build concepts to all of our projects. We invite our clients to involve us early in the design and preconstruction process by allowing us to provide design reviews and value engineering. We feel that this allows us to minimize risk for both the owner and ourselves while maximizing the value and efficiency of the client's construction process. We feel that the expertise of specialty contractors should be utilized by owners whenever possible.

**JV:** *What have been your main challenges due to your company's rapid growth over the past ten years?*

**MG:** As any contractor knows, growth does not come without its share of headaches. I feel that we did a fairly good job of forecasting these problems and managing them. I believe the most important key to our successful growth was having a solid core of employees that truly functioned as a team. This core represented a good mix of expertise in floor construction, heavy foundation construction, and structural concrete. With this core of employees established, we were able to manage the influx of new team leaders required to manage the increase in projects. We reinforced our Safety Committee by employing a Safety Director who is dedicated specifically to Specialty Contracting. We also established a Quality Committee to help educate and train our employees and to manage the quality risks on our projects.

**JV:** *Given all the industrial floors your company has done over the years, what are the elements most important to delivering a great job? How has that changed over the years?*

**MG:** Again, communication. One of the most important first steps on a project is establishing the owner's true expectations. A lot of times we envision what is specified differently than what the owner is expecting. It is important to clear this up PRIOR to the start of a project.

Advancements in equipment and materials within the industry over the last 10 years have really changed the concrete industry for the better. Laser screeds have allowed us to improve our construction practices and produce a better finished product for an owner and provide greater value. Steel fibers have revolutionized floor construction. We can now complete large floor construction projects faster and better than ever before.

These advancements have made the pre-construction process all the more important for us. We need to be able to work with our owners, engineers, and suppliers to ensure that a floor design is developed that fully utilizes these advancements. When this design team concept is achieved, it truly allows the project to flow more productively.

**JV:** *How important are the new super flat floors to your business? How have those tighter demands/specs changed in your industry over the past 10 years?*

**MG:** The advancement in materials and equipment has greatly increased the successfulness of superflat floors. With any specialty process, the most important thing is planning. Often times we will utilize a third party design consultant to verify our

*Continued on Page 6 >*

“ The design-build philosophy reduces the amount of time and money wasted on design revisions, industrial process conflicts, and change orders, all of which provides greater value to the owner. ”

mix designs and placement plans to insure that projects move smoothly. There is so much research that has been done in the industry on the construction of superflat floors, that a contractor would be foolish to not utilize a professional “second opinion” prior to construction of a specialty item like superflat floors.

*JV: How important are post-tensioned concrete floors to your overall business? How did you carve out that business and set up your company to specialize in that segment of the business?*

**MG:** We feel that a big advantage that Barton Malow has over its competitors is that we self perform the installation of reinforcing steel and post tension systems. We have personnel that are Post Tension Institute certified. This allows us to control the post tension construction process with the same personnel that are installing our reinforcing steel. Given this staffing, we are able to actively pursue post tension projects and provide our clients with a complete in-house concrete construction process. We feel that this allows us to control quality, safety, and schedule risk more efficiently.

*JV: How have the auto industry cut-backs affected your overall business in the Great Lakes area?...And what are you doing elsewhere to replace this sector of lost business?*

**MG:** Without a doubt the automotive industry impacts our region more than any other market sector. Over the last ten years we made a focused effort to increase our presence within the energy and environmental markets. We have completed major projects in recent years at water treatment plants, wastewater treatment plants, ethanol plants, steel mills, coal-fired power plants, gas-fired power plants, and wind turbine farms. That being said, we have maintained our presence in the automotive market. In the last 4 years, we have placed over 1.5 million square feet of industrial floors for automotive manufactures with another 1 million in the forecast for the next year. The major difference is the project delivery method. We have constructed most of these projects in a design-build method with Barton Malow Company as a whole. In this delivery, we are able to increase the value to our owners through value engineering, schedule improvement, and cost management. The design-build philosophy reduces the amount of time and money wasted on design revisions, industrial process conflicts, and change orders, all of which provides greater value to the owner.

*JV: What is your position on the appropriate use of fly ash in concrete mix designs?*

**MG:** I believe the use of fly ash in concrete can be beneficial as long as the mix is properly designed and controlled. Fly ash allows us to economically provide solutions to situations that require control of heat of hydration, increased chemical resistance, and long term durability. Again, the key to proper use of fly ash mixes is communication with the ready mix supplier and insisting on careful quality control.

*JV: How important are the new generation of floor hardeners/densifiers/sealers to your business? What words of wisdom can you share with other contractors about this side of the business?*

**MG:** We consider these to be specialty items that need to be clarified with owners to verify their intended purpose. On several occasions, our suppliers have been able to make product substitution suggestions to our owners to better meet their requirements. This is especially true in the selection of shake-on hardeners. With all of the various products available, it is important that the right hardener is selected for the intended service of the floor.

## About Mario Garza

Mario Garza is the preconstruction manager for Barton Malow Company.

Mario Garza Jr. has been with Barton Malow Company's Concrete Division for over 10 years. Mario began his career in the field as a layout engineer and worked his way up through the ranks to superintendent and project manager.

In his current role of Preconstruction Manager, he is responsible for the entire preconstruction and estimating effort of Barton Malow's Concrete Division.

Mario is a graduate of the University of Michigan with a B.S.E. in Civil and Environmental Engineering with emphasis in Construction Engineering. He is a member of the Concrete Reinforcing Steel Institute. Mario is an active member of the American Concrete Institute (ACI) International, holding positions within ACI Committees 306 - Cold Weather Concrete and 207 - Mass Concrete.

Additionally, Mario sits on the Board of Directors for ACI's Greater Michigan Chapter.

### Contact Information:

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Preconstruction Manager, Barton Malow Company

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For those who get paid by the word, the title of this article was supposed to be “Repairing Concrete Failures With Rapid Setting, Shrinkage Compensating Cementitious Materials.”

By Peter R. Kolf and Terry J. Willems

For everyone else, let's just call it

# How to Fix Concrete.

## Introduction

Numerous material properties affect the short- and long-term performance of concrete repair products. The diversity of such properties as well as the diversity of product applications has led to a proliferation of specialized proprietary products.

## Drying Shrinkage and Shrinkage Compensation

Drying shrinkage presents many problems for concrete structures in general and repair projects in particular. Accommodating a shrinking repair product that is adhered to a dimensionally stable substrate presents difficult issues in the restoration market and leads to an obvious desire for a repair product with reduced drying shrinkage.

One repair material chemistry that might appear to offer the potential for shrinkage compensation as well as accelerated set is expansive cement or calcium sulfate based chemistries. While “shrinkage compensation” is a term that in the repair product industry is loosely defined, per ACI 223 the basis for shrinkage compensation lies in the expansion of cement paste within curing concrete. Properly used, this expansion creates a pretension in embedded reinforcing steel and corresponding precompression in the concrete. Later-age drying shrinkage strains relieve the precompression without inducing tensile stresses in the concrete.

Expansive cements utilize sulfates and aluminates to initiate an expansive reaction resulting in ettringite formation. This expansion in curing concrete can be used to provide shrinkage

compensation. This same reaction in hardened, cured concrete is called internal sulfate attack and can be destructive. Therefore, an essential factor in use of shrinkage compensation is controlling this reaction. ACI and ASTM present three types of expansive cements: Types K, M, and S. (1)(2) Of these, only Type K is currently commercially available in the United States. Nevertheless, product manufacturers use chemistries similar to those of expansive cements to achieve desired results.

In expansive cements, the reacting sulfate is calcium sulfate that may be present in the form of anhydrite ( $\text{CaSO}_4$ ), plaster ( $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$ ), or gypsum ( $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ ). Most failures observed by the authors have been related to chemistries similar to those used in Type S cements. In such chemistries, calcium sulfate reacts with tricalcium aluminate (C3A) present in portland cement clinker. Typically, the product formulations involved in observed failures have incorporated relatively small quantities of gypsum added to an otherwise portland cement based product.

As with any of the shrinkage compensation chemistries, the expansive reaction (formation of ettringite, or calcium sulfoaluminate hydrate) requires significant water. Therefore, proper curing is essential and failure to provide sufficient water during cure has the potential to stop the reaction until sufficient water may become available at a later age.

Continued >



Photo 1: Repair Failure Exhibiting Crack Pattern Indicative of Volumetric Expansion at a Building Slab Edge.



Photo 2: Repair Failure Exhibiting Spalling and Paste Degradation at a Balcony Corner.

## Accelerated Setting

Products containing elevated levels of calcium sulfate generally have accelerated set times. Although rapid/accelerated set is not a requirement for many repairs, there are instances where it is desirable. One is short-downtime applications that typically involve repairs affecting use of a functioning facility. Another is trowel grade mortar used in vertical and overhead repairs for which accelerated set enhances non-sag characteristics and allows heavier application thickness. Hence, calcium sulfate additions are more likely to be used in such products.

Product formulations will be susceptible to differing modes of deterioration based on their chemistries. Some accelerated-set products have been formulated by blending portland cement with relatively large quantities of gypsum. Such a formulation will support ettringite formation only to the extent that aluminates in the cement are present. Consequently, significant quantities of unreacted gypsum will be present in the hydrated material. Due to the solubility of this residual gypsum, while such a material may have a use in the repair market as a fast-set material, it should only be considered a temporary repair material in exterior environments. Previous work by NCHRP supports this.(3)

## Flawed Application

There is an inherent flaw in the use of expansive cement chemistry for the vast majority of repair applications

As previously discussed, shrinkage compensation, as defined in ACI 223, involves an early age expansion during hardening of concrete that compensates for later age drying shrinkage. ACI 223 discusses at length the design and detailing needed to allow for the early expansion and subsequent shrinkage. However, typical repair applications do not allow for expansion since they are either bonded to or confined by existing concrete elements. ACI 223 indicates that for applications where high restraint is present, little shrinkage compensation will result.

## Telltale Signs

In the authors' experience, signs of faulty repair material chemistry such as that discussed have been observed within approximately one to five years from time of repair installation, although other time periods are possible. Observed conditions have been consistent with the deterioration mechanisms discussed, i.e. volumetric expansion and dissolution of cementitious binder. Thus, potential indicators of elevated levels of calcium sulfate would include:

- 1.) cracking patterns consistent with volumetric expansion often exhibiting crack widths disproportional to the repair dimensions and
- 2.) degradation of the repair material in a manner somewhat consistent with freeze-thaw deterioration.

Further, the proportions between reacting sulfates and aluminates are important in controlling the timing and extent of the reaction and ensuring that residual unreacted elements do not remain to react detrimentally at a later age.

Detrimental reactions that may be associated with elevated levels of calcium sulfate include internal sulfate attack and dissolution of residual gypsum from cured repair product. As previously indicated, internal sulfate attack may occur due to lack of sufficient water present during early ages and later exposure to external sources of water. It may also be caused by residual unreacted sulfates or aluminates that become exposed to external sources of reacting agents. Formation of ettringite within the cement paste induces expansive pressures within a hardened cement matrix, causing cracking and associated paste degradation.

Since gypsum is soluble in water, dissolution of residual gypsum over time and consequent degradation of cement paste may occur if materials are exposed to external water sources in service. Subsequent to gypsum dissolution or internal sulfate attack, repair materials may become exposed to further degradation, such as from freeze-thaw cycles, as water penetrates cracked or degraded surface materials.



## State of the Industry

Engineers or others who have spent significant time and effort studying product data sheets have had the experience that test data presented is often not directly comparable between various products, and may or may not have any applicability to real-world installations. Current tests for shrinkage compensating materials generally allow for expansion with only limited resilient restraint since that is the behavior intended for applications as indicated by ACI 223. Further, these tests generally specify a 7-day laboratory saturation cure that cannot even be simulated in many repair applications. (4)(5)

There have been recent advancements in developing criteria that can be used to provide more meaningful and consistent test data on repair product data sheets. The International Concrete Repair Institute (ICRI) has recently developed ICRI Guideline 03740, Guideline for Inorganic Repair Material Data Sheet Protocol, and a commentary to this protocol is currently in development.

It is understood that product manufacturers cannot have limitless R&D budgets for each of their products. Nevertheless, it is reasonable to expect that significant testing into product properties and possible product limitations would be performed by manufacturers aware of product chemistries and intended markets.

## How to Specify?

How, then, is an individual to specify a product if data sheets provide only limited information? We offer the following minimum recommendations:

1. Service History: The product should be able to demonstrate good long-term performance in similar applications. Short-term performance provides only limited information.
2. Product Data: Read the product data sheet carefully, paying close attention to intended applications and noted product limitations. Keep in mind that test data presented may not reflect conditions that are applicable to your project. Be wary of concrete repair products with test data indicating product expansion.
3. Manufacturer Involvement: Obtain the involvement of the product manufacturer. Make sure they are aware of the intended application and service conditions. Reputable manufacturers should provide statements indicating that project conditions have been reviewed and that the specified product is appropriate for use as specified.
4. Learn: Develop a basic understanding of repair materials you may specify. Inquire regarding the source of characteristics such as accelerated set, shrinkage compensation, etc.

## Closure

Simply put, avoid products possibly marketed as shrinkage compensated or rapid setting repair materials that utilize calcium sulfate additions to otherwise portland cement based products, since the potential exists for premature failure. Based on the authors' experience, such chemistries are at best unreliable with current state of knowledge.

The repair industry has made significant advancements in developing reliable, durable, repair products. Reputable

manufacturers have been at the forefront of many of these advancements. However, more work is needed. It would greatly benefit the repair industry to encourage research, increase interaction among chemists, manufacturers, specifiers and users, and develop standards that aid in keeping inappropriate repair materials off the market.

## References

1. ACI 223, "Standard Practice for the Use of Shrinkage-Compensating Concrete"
2. ASTM C 845, "Standard Specification for Expansive Hydraulic Cement"
3. NCHRP Synthesis of Highway Practice Report 45, "Rapid-Setting Materials for Patching of Concrete", 1977
4. ASTM C 806, "Standard Test Method for Restrained Expansion of Expansive Cement Mortar"
5. ASTM C 878, "Standard Test Method for Restrained Expansion of Shrinkage-Compensating Concrete"

## About the Authors:



**Terry Willems,**  
Principal  
Materials  
Scientist,  
CTLGroup



**Peter Kolf,**  
Principal  
Structural  
Engineer,  
CTLGroup

Mr. Willems' responsibilities include consulting and testing associated with construction materials evaluation, troubleshooting material performance problems, durability evaluations, forensic investigations and litigation support.

**Professional Affiliations**  
American Concrete Institute (ACI)  
*Committee 524 Plastering - Secretary*  
*Committee 515 Protective Systems for Concrete - Secretary*  
*Committee 303 Architectural Cast-in-Place Concrete*  
*Committee 201 Durability of Concrete*  
The Society for Protective Coatings (SSPC)

**Publications and Presentations**  
Mr. Willems has authored or coauthored 6 publications regarding petrographic examination of concrete, evaluation of buildings, and materials testing.

**Awards**  
ACI Wason Medal for Materials Research, 2001

### Professional Profile

Mr. Kolf is active in a wide range of projects involving structural evaluation, strengthening, rehabilitation, and durability enhancement.

Typical projects have involved evaluation of the extent and causation of structural distress or deterioration as well as development and implementation of repairs.

**Registrations**  
Licensed Structural Engineer - Illinois  
Licensed Professional Engineer - Illinois  
**Professional Affiliations**  
American Society of Civil Engineers, ASCE - Member  
International Concrete Repair Institute, ICRI - Member  
Repair Materials and Methods Committee Evaluation Committee  
**Published Works**

Mr. Kolf has authored and coauthored eight articles published in industry trade publications and trade conference proceedings.



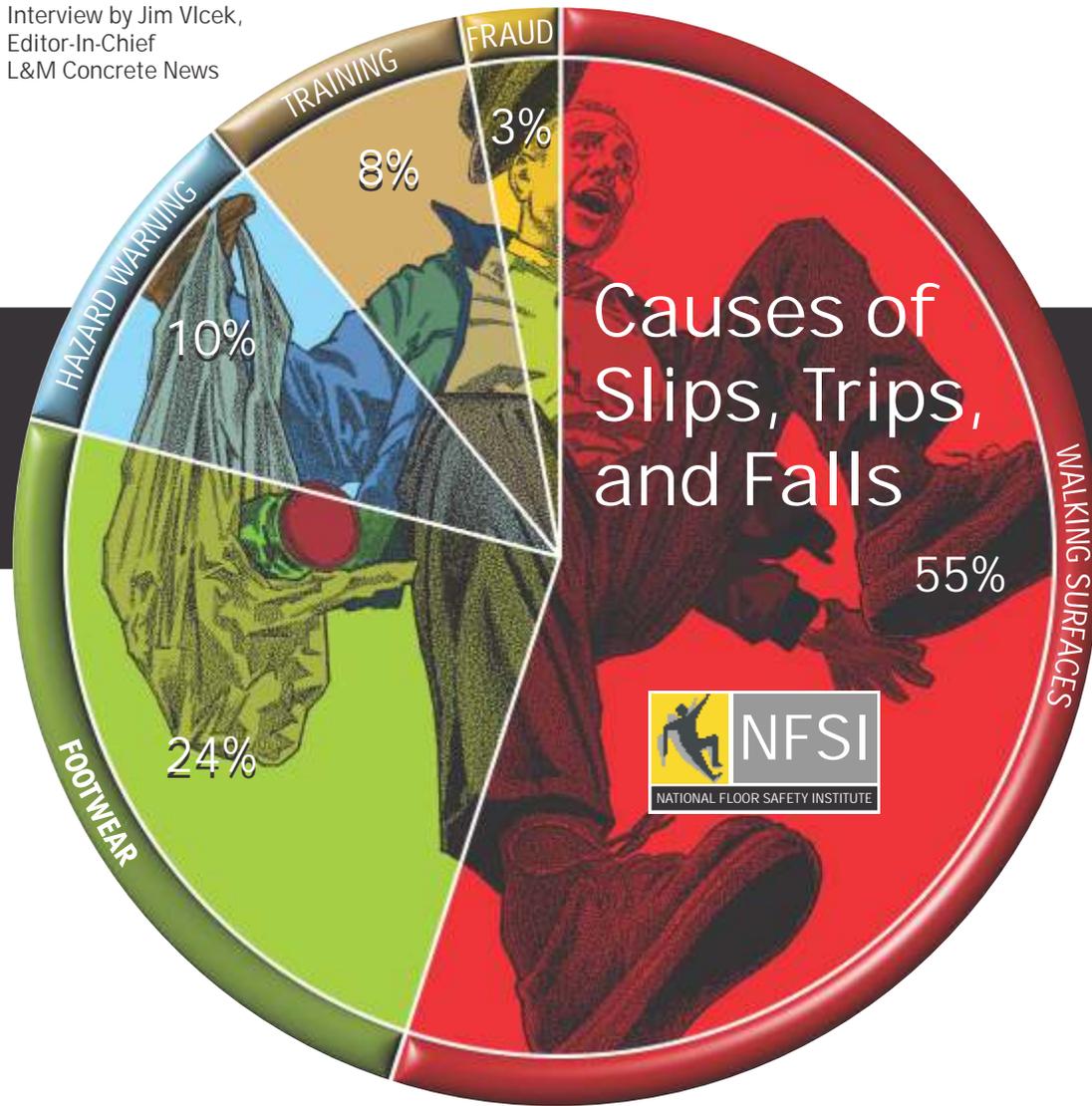
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Russ Kendzior,  
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National Floor Safety  
Institute (NFSI)

In a recent interview by Jim Vlcek, Editor-In-Chief of Concrete News, Russell Kendzior, Founder and President of the National Floor Safety Institute (NFSI), spoke out on behalf of the new ANSI/NFSI B101.1 floor safety certification. Kendzior is also the secretary for the ANSI B-101 committee on the prevention of slips, trips, and falls. He stressed that all floor planning people should understand and effectively use this new certification when talking to floor owners, architects, designers, spec writers, facilities directors, planners and especially the FGS installers.

Kendzior explained just how important the “safety” issue is now...and will continue to grow in importance in the future by saying: “I think it's essential for all individuals connected to the FGS floor system to realize that, for the first time in American history, there actually is a uniform, national standard (ANSI/NFSI B-101.1) that defines three individual risk categories or “traction ranges” for all floors....including polished concrete FGS floors. This has never happened before.

*JV:* In the past, there never was a uniform way to measure the slip resistance of a walkway which allowed the property owner to determine the safety of their floors...why is this so important now?

*RK:* “The ANSI/NFSI B101.1 standard is relatively new and in the first stages of being specified by architects, designers, and property owners. Forward thinking flooring contractors, such as FGS installers, can really benefit by informing their customers the standard and should make safety a part of their sales presentation. In fact, if ANYONE should be carrying that banner of walkway safety, it should be the FGS installers. Why?...for the sheer reason that the FGS PERMASHINE floor product has been NFSI Certified as “High-Traction.” The FGS installer has 'bragging rights' when it comes to meeting the high-traction range per the ANSI/NFSI B101.1 standard. They have three reasons to carry this “safety



“If ANYONE should be carrying that banner it should be the FGS installers. Why? For the sheer reason that the FGS PERMASHINE floor rating is rated in the HIGHEST category. The FGS installer has 'bragging rights' when it comes to ANSI B101.”

– Russ Kendzior, Founder and President, National Floor Safety Institute (NFSI)

# ANSI B101.1

banner” to their customers! First, the flooring contractor has an obligation to educate clients about those standards which impact the safe operation of their business. Second, FGS installers are often required by contract to provide a “slip resistant” proof of this, such as based on the ANSI/NFSI B101.1 standard and NFSI product certification. Finally, FGS installers and their clients can defend themselves in the event of a slip-and-fall claim and lawsuit. (most FGS installers architects, engineers and planners have clients who are very concerned about the safety of their floors and want them in compliance with the industry standard for safety).

If the FGS client is the target of a lawsuit, they can claim in court that they (the end-user of the FGS system), have purchased a floor system that has been independently tested and is in compliance with the ANSI/NFSI B101.1 standards high-traction rating. For the FGS installer, this is a selling point and gives him 'edge' on the competition.”

*JV:* Explain the issue of floor safety and how NFSI is approaching the floor systems and floor coverings industries.

*RK:* “When you ask a business owner about their slip and fall problem they will often respond by saying, ‘of course we have a problem with customer and employee slips and falls...that is why we have insurance!’ Unfortunately, given the current recession and increasing insurance costs, such an answer is unacceptable. Safety is a profit center and products that prevent slips and falls are a key buying factor when it comes to selection of flooring materials. I believe that in the months and years to come a growing number of flooring manufacturers, architects, designers, and property owners will be embracing polished concrete floors, in part, because of its enhanced safety benefit.”

The ANSI B101 committee is currently in the final stages of approving a new product labeling standard entitled ANSI/NFS B101.5. Once approved, product manufacturers will be encouraged to label their floor covering product(s) with this new, uniform labeling method to better inform the consumer. The proposed ANSI/NFSI B101.5 label will look similar to the gas gauge in your car and will have three distinct ranges... “HIGH”, “MODERATE”, and “LOW” traction. The arrow will point to one of the three traction ranges, which are color coded as green (high-traction), yellow (moderate-traction), and red (low traction). This simple labeling standard will be an important step in educating consumers as to the safety benefit of all the floors they seek to purchase, which, in the end, will serve to reduce slip and fall events.

I believe that in today's economy, floor care is being elevated to include safety. Many people clean their floors because they look dirty, assuming they are making them safer, only to find that the cleaning product left a slippery film. Several years ago the NFSI conducted a study on household floor cleaners and their effect on slip resistance. The study revealed that most household floor cleaners actually made floors more slippery after use which is believed to directly contribute to the growing number of falls in the home. The growing number of slip and fall claims taking place over the past couple of decades have put a lot of pressure on both floor owners, insurance companies and floor maintenance companies to really come up with better solutions for prevention techniques for slips and falls. This, of course, is being driven primarily by the aging of our society.

The most likely slip-and-fall victim is an elderly individual (defined as someone over 60 according to the ADA). The

baby boomer generation has now reached that age and thirty-seven-and-a-half million Americans over the age of sixty are going to double to more than seventy-seven-million by the end of this decade. They are the most 'likely' victims of slip-and-fall accidents happening outside of the home in the business environment. When we do the math, it is estimated that falls cost the country more than \$80-billion annually. That number could go to over \$100-billion, which includes everything in the mix—litigation, hospital care, insurance company pay-outs, Medicare and Medicaid payments, etc.”

“NFSI's standards are in the process of being developed into ANSI standards. ANSI carries the distinction of being one of the world's most respected standards developing organizations.

*JV:* Keeping insurance premiums down makes good sense for all of us. How have insurance companies responded to this new rating system?

*RK:* “We anticipate that the insurance industry will, in the years to come, begin to require that their policy holders have their floors tested per the new ANSI standards. Choosing a floor like FGS may help in reducing insurance premiums. On the flip side, property owners whose floors are not certified as high-traction have to deal with higher insurance premiums. Once again, it all starts with the architects and spec writers...and travels downstream to the floor owners and FGS installers.

In an effort to reduce slip-and-fall claims and their related costs, many insurance companies have recommended that their customers use NFSI certified floor products and to have their floors audited at least once a year by an NFSI Certified walkway auditor. High-traction floors have been clinically proven to reduce slip-and-fall claims by as much as 90%.”

*JV:* Russ, how does all of this effect the concrete industry and the people involved in building, design, and construction?

*RK:* “The engineers, architects, specifiers, and FGS installers should be able to capitalize on this emerging safety trend. The insurance industry now has a clear measurement 'tool' and they have all kinds of actuarial charts for determining their rates. If you have a pit bull or trampoline or swimming pool in your back yard, your insurance rates will go up. The insurance industry



▲ The BOT-3000 Universal Walkway Tester is the most advanced, easiest, and accurate traction testing machine.

actuaries understand how to measure risks to raise or lower rates. This ANSI B-101.1 standard can be used to reduce slip-and-fall claims and their related costs.

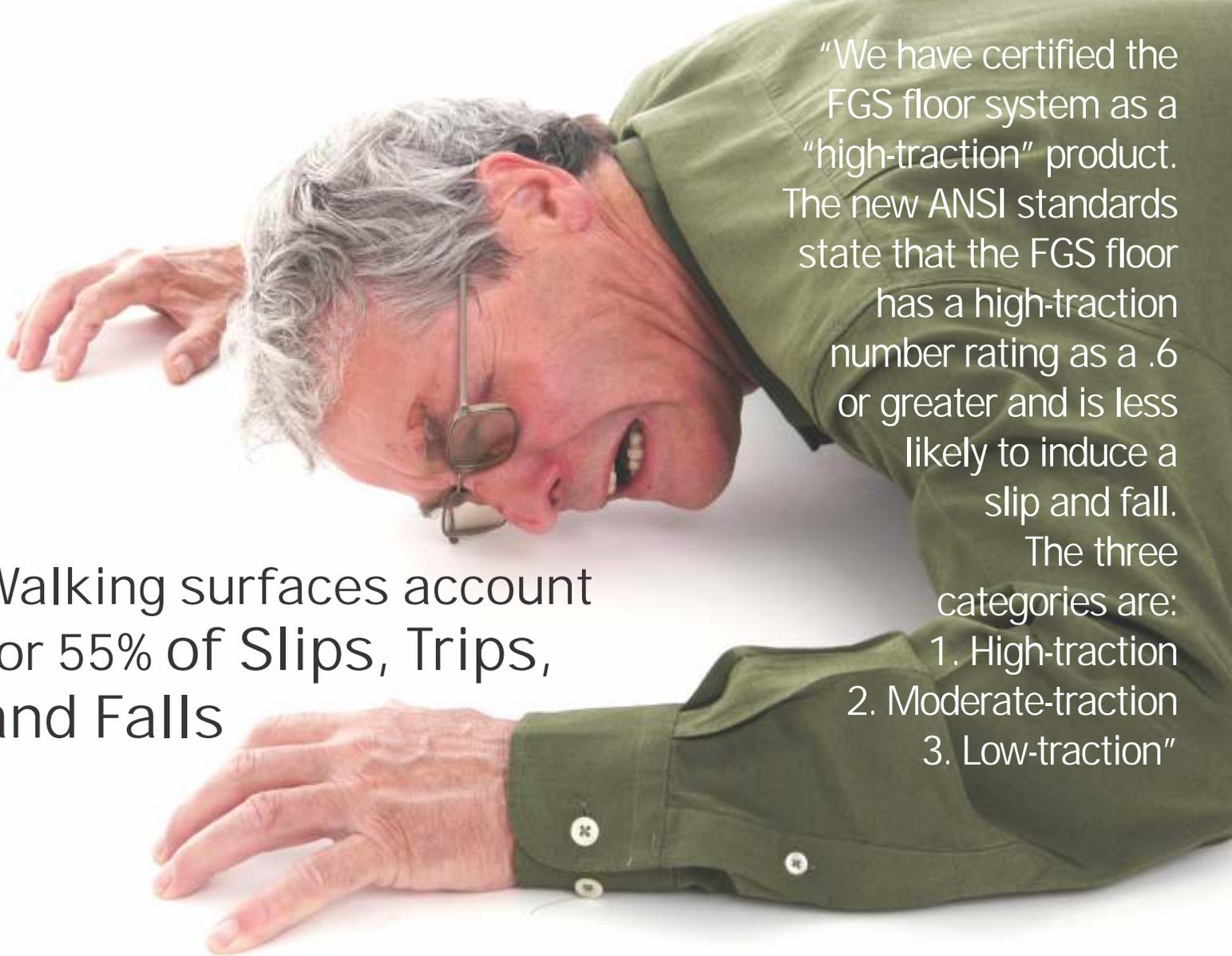
I would recommend that everyone responsible for specifying or installing floors consider taking the NFSI's certified walkway auditor training class. This four-day program will provide critical information about types of floor coverings, proper maintenance techniques and detailed information on the growing slip-and-fall problem.

The attendees will learn the step-by-step process of auditing a floor and will get a full day of hands-on training as it relates to using different slip meters. To attend a NFSI walkway auditor training class, FGS installers and other interested individuals can sign up at [www.nfsi.org](http://www.nfsi.org).

I believe that insurance underwriters will soon require that floors be audited per the ANSI/NFSI B101.1 standard BEFORE a floor owner's insurance premium is determined.

Testing a floor has never been easier. The BOT 3000 is the only device approved by the NFSI and is the most advanced floor testing device on the market. This robotic device is about the size of a shoebox and is easily portable. It does not require a high level of user training and is extremely accurate. After each test, the user has the option of recording the result from the device's LCD display or print it out. If the FGS installer chooses not to do the testing for themselves, they can recommend that their clients hire an NFSI Certified walkway auditor to do the test and a list of auditors is available on the NFSI's website. In the months and years to come, we'll see that trend in the insurance industry. It is why your FGS installers need to embrace this segment of the industry...they should be using it to their benefit with EVERY floor owner they make presentations to.





## Walking surfaces account for 55% of Slips, Trips, and Falls

“We have certified the FGS floor system as a “high-traction” product. The new ANSI standards state that the FGS floor has a high-traction number rating as a .6 or greater and is less likely to induce a slip and fall.

The three categories are:

1. High-traction
2. Moderate-traction
3. Low-traction”

Your FGS installers, architects, specifiers and floor owners need to understand that the safety of floor systems and floor coverings has never been more important than it is today! Polished concrete is a great alternative to 'other' flooring materials that may not possess that high-traction capability. Professional concrete floor installers should communicate this concept to their prospective clients as they promote FGS/PermaShine floors. It holds true, not only in the architectural or design genre, but all the other segments like retail, restaurants, offices, manufacturing, industrial, schools, etc.

Safety will be a key buying factor when it comes to the selection of flooring materials. Those FGS installers who understand and embrace this concept will ultimately see their business grow, while those who don't will miss a tremendous opportunity.” ■■



# NFSI

NATIONAL FLOOR SAFETY INSTITUTE

For more information  
about floor safety,  
go to  
[www.nfsi.org](http://www.nfsi.org)



## ASCC 2011-12 Member Contractors Benefit From Clay Fischer's Leadership and Construction Wisdom

By: Jim Vlcek, Editor-in chief

In a ceremony at the last World Of Concrete show, Clay Fischer, CEO of Woodland Construction Company, was voted the new president of the ASCC. Fischer comes aboard the organization with a wealth of experience in the industry. In an interview with this editor, Fischer talked about the ASCC and how he thinks his role as current president can aid other concrete contractors.

*Jim Vlcek (JV): Clay, following your appointment as President of The ASCC, what is the main thing you'd like to focus on during your term?*

Clay Fischer (CF): "Periodically, the ASCC does a strategic plan for moving the society forward. We have been very successful at accomplishing that goal with an eleven member task force which includes Bev Garnant, our Executive Director. This task force is comprised of a diverse cross-section of contractors from the concrete industry with a wealth of experience and knowledge in various fields including decorative, repair, and equipment manufacturing. Our strategic plan is to further expand on ASCC's educational and training programs, our technical effectiveness as an organization, and the promotional effectiveness of the ASCC brand.

The ASCC membership contains some of the best concrete contractors in the world and we are a force to be reckoned with. Our goal is to work with code and specification writers to help clean up problems that plague our contractors and improve our overall industry."

*JV: How many members do you now have in the ASCC?*

CF: "Our membership is now up to around 480 active members. It comes from all over the US as well as other countries such as Canada and New Zealand."

*JV: Last year when I interviewed your predecessor, Paul Albanelli, I heard a lot about ASCC's e-mail forum. Tell me how this program is evolving and where you think it will go during your term as president.*

CF: "This program is doing extremely well and has become one of our best member benefits. It has grown steadily each year. Almost every day, I receive two or three forum questions in my e-mail, ranging from business practices, concrete and finishing, material, equipment...you name it. There are about 200 members in the forum from a broad cross-section of the industry, which



Clay Fischer, New ASCC President

## Clay Fischer: New ASCC President

means there is a lot of extremely useful knowledge out there that can be shared with all the members. Almost any question that comes up on the forum is answered by at least one person and often multiple people who have had the same issue at one time or another. It's a great resource knowing that someone has run across a similar concrete problem or application before and can help.

*JV: Can you elaborate on how the ASCC 'Management Information Exchange' (MIX) group program works for the members?*

CF: "Essentially it is a group of non-competing, geographically diverse contractors that have formed a peer group. They hold rotating meetings at their places of business to share some of their business practices, technical capabilities, personnel issues...anything to help each other do a better job with their business. The group can discuss some pretty delicate issues so there has to be a lot of trust and respect for one another. There are about 13-14 active groups, each with 5 to 8 people. Again, there has to be the right chemistry for the group to work.

*JV: How has the ASCC personally helped you and your company over the years?*

CF: "I can truthfully say that without those whom I have met and what I learned by being an ASCC member, Woodland Construction would not be where it is today and I would have missed out on making some great and long-lasting friendships."

*JV: What do you feel you can do to personally help other members?*

CF: "We have instituted so many programs and benefits for our members that I think many members may not be aware of all ASCC has to offer. The biggest thing I can do is help them know what is available to them through their membership."

*JV: What are your major responsibilities as the new president and what is your personally favorite reason for being an ASCC member and president?*

CF: "ASCC has a terrific staff which helps make the president's job a lot easier than it used to be.

My main responsibilities are making sure our strategic plan keeps moving forward, membership on the Executive and Administrative Committees, chairing our board meetings and writing the dreaded monthly 'Presidents Message' column for our newsletter. As far as my favorite reason for being an ASCC member, it's all about the people." ■■■



## PROFILE:

### Woodland Construction Company

#### Clay Fischer

Clay Fischer is the founder, Chairman, and CEO of Woodland Construction Company, one of the leading concrete and tilt-up contractors in the country.

Woodland Construction Company, based in Jupiter, Florida, was incorporated in 1987, and presently has about 150 employees. Since its inception Woodland has constructed over 60 million square feet of concrete buildings and over 450,000 tilt-up panels. Building types include educational facilities, warehousing, distribution, industrial plants, parking structures, multi story office buildings, retail, auto dealerships, religious facilities and housing. Woodland has received numerous awards for both their construction projects as well as their business practices.



Beverly Garnant, Executive Dir., ASCC

## From the ASCC Executive Director

### Bev Garnant:

The ASCC now has three Councils that provide special, focused opportunities for members in particular interest groups. While falling under the direction of the broader ASCC board, they each have their own board of directors, with programs and subcommittees as they deem appropriate. The first was the Decorative Concrete Council, formed for those working in the area of decorative concrete. This Council has sponsored specialized seminars and demonstrations at a number of events, showing amazing examples of cutting edge decorative concrete work.

For more about joining the ASCC, go to [www.ascc.org](http://www.ascc.org)

## ProjectProfile

### Boise Art Museum

Boise, Idaho By Jim Vlcek, Editor

When Ron Walker, Chief Preparator and Project Manager for the new sculpture gallery project set out to design and plan the floor system, they wanted a one-of-a-kind look for this notable facility. The floor had to look rich, but not too distracting as to take away from the exhibits focus. It had to be durable, but not high maintenance. It had to be safe to walk on, even when wet. Most of all, it had to make a subtle, yet elegant statement for each repeated exhibit no matter what artistic media was involved. Ron met with FGS installer, Bob Haggerty from the Boise area to find out if it was all possible.

Ron commented, "We sort of knew what we wanted, but I had to see for myself what kind of magic Bob had done in the past. I had heard about his work, but wanted to see some of the more 'artistic' FGS jobs he had completed. The main part of the building we occupy was actually built in 1937 by WPA workers for the city of Boise. It has had three additional concrete expansion pours over the years (the last one in 2001). That last pour had a black integral color added to the mix design. This last pour produced the sculpture court. Bob did wonders to enhance this 10-year-old concrete floor using a #1500 final grit. It brought out some of the original aggregate, but left the rich black color in the broad areas. Everyone really likes our new FGS floor. We have heard many positive comments from staff and visitors alike since the installation."



Even the floor is a work of art at The Boise Art Museum

## Projectstatistics

Bldg. Name	Boise Art Museum
Location	Boise, Idaho
Building Constructed	Original building built in 1937. Sculpture exhibit in 2001
Owner	City of Boise, ID
Floor responsibly	Ron Walker, Project Manager, Chief Preparator
Areas FGS	Sculpture Court Gallery
FGS Certified Applicator	Bob Haggerty, President Haggerty Flooring, Boise, ID
L&M Regional Manager	Emilio Bengoa
Approx. Sq. Footage	2,800 sq. ft. w/integral black stain



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# Parting Shot

Jared McCarthy Creative Director

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Just find the hidden picture of the Bev Garnant. (See page 15) Give us her coordinates (Like B-17 or J-4). Put your answer on the reply card inside and send it in for your chance to win a brand new Garmin G5. Random drawing of correct answers to be held on September 15, 2011. (If you don't win the Garmin, you might be one of two lucky Omaha Steaks winners!)

Of course, there are the usual disclaimers like employees of L&M Construction Chemicals can't enter and that prizes may be substituted. Good luck! And keep those cards and letters coming!

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Find the hidden picture for your chance to win! Enter the coordinates of the hidden picture of Bev Garnant (as seen on page 15) from the back cover. Put your answer in the box below. Complete this entry to qualify to win a Garmin G5 Approach or Omaha Steaks. *The first 100 entries will be entered into a September 15, 2011 drawing. One winner will receive the Garmin G5. Two more winners will receive \$50 Omaha Steaks gift certificates.* Three lucky winners will be selected from a random drawing. Enter your answer in the box, then fill out the card and fax it to 402-453-0244 or mail to L&M Construction Chemicals, Inc. Winners will be announced in the next issue. Entries must be received by September 14, 2011 qualify.

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Any comments about L&M Concrete News? \_\_\_\_\_

Where is Bev Garnant? (See Page 15)  
Enter the coordinates (such as A-1, D-17) here:  
\_\_\_\_\_

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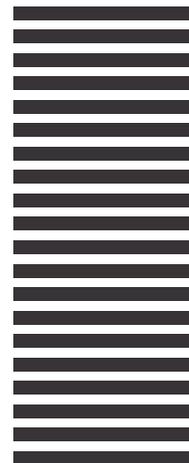


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