Spring 2018

THE CONCRETE FLOOR REPORT

NEWS FOR EVERYONE WHO DESIGNS, BUILDS, MAINTAINS, OR OWNS CONCRETE FLOORS

A Publication of The MJA Company, Serving New York Since 1988

Improving the abrasion resistance of concrete floors.

You may have seen articles about polished concrete floors and the chemicals that are used to treat them. But what about exposed concrete that is not polished? Does it make sense to treat these floors?

Non-polished or "bare" concrete is found in many settings including retail space, warehouses, schools and industrial or commercial buildings. In many cases, the concrete is the working floor surface in these buildings whether they are new construction or rehabilitated older structures. Having exposed concrete as your floor surface is cost effective compared to covering the floor with epoxy, VCT, carpet or other flooring materials. So how do you treat the floor right?

No floor is exempt from abrasion damage

Given time and traffic, all concrete floors will undergo wear through abrasion. The dust and dirt on your floor will act as an abrasive material whether it's brought in by traffic or created by processes that take place in your facility. This abrasive debris is ground into the surface by foot traffic or if it is a warehouse, by forklift traffic.

Liquid hardener/densifiers can help.

Let's examine the structure and chemistry of concrete in order to understand how the hardener/densifier materials work.

The **aggregate** in concrete is held in place by the **cement paste**. This cement is what gives the concrete its strength. The fine aggregate and solidified cement paste are at the surface. It is the hardness of the fine aggregate and the strength of the hardened paste that determine the overall abrasion resistance of the concrete surface. This makes up what is called the **Near Surface Wear Zone**.

The near surface wear zone is that portion of the concrete just underfoot, down to a depth of about 1/8 inch. If the aggregate is lost from this area of the concrete, the cement paste which is softer than the aggregate will be worn away by abrasion.

Protecting the Near Surface Wear Zone

How can we improve the abrasion resistance of the cement paste? To a certain extent, hard trowel finishing will improve abrasion resistance. The process pushes the cement particles closer together which allows the crystalline structure that is developing during hydration to interlock into a very dense mass. By having the cement crystals in very close proximity to each other, the hydrated cement will hold each individual aggregate particle very tightly. This, in conjunction with proper mix ratios for the chemical reaction and proper curing, contribute to the concrete surface its abrasion resistance. How do chemical hardeners fit into this picture? No matter how good the mix and the finishing of the concrete, there is always room for improvement to the abrasion resistance. This can be achieved by treating the hard-trowel surface with a chemical hardener/densifier.

How it works:

Hydrated cement paste contains microscopic particles of calcium hydroxide which are by-products of the hydration process. Calcium hydroxide is a comparatively soft material which can be eroded away very quickly by a modest amount of abrasion. This will lead to microscopic pits forming in the surface of the concrete.

The edges of these micro-pits are very susceptible to abrasion, in much the same way as a pothole on the highway. The pothole may start small but soon becomes larger as its edges wear away. Chemical hardeners

Like potholes in a road, nearly invisible to start, micro-pitting grows and creates dangerous, expensive floor damage.

continued on page 2

... Abrasion resistance from page 1

convert the soft calcium hydroxide particles into very hard and dense calcium silicate hydrate. This is the same crystalline structure that is formed when cement hydrates. When calcium hydroxide is transformed into more calcium silicate hydrate crystals, the cement paste becomes more uniformly hard giving the cement paste greater aggregate holding power and thus better wear resistance.

As an added benefit, the chemical reaction from the treatment of hardener/densifier fills the concrete's pores which reduces the porosity of the concrete surface. This slows the penetration of most liquids, giving you time to clean them off your floor and avoid staining.

So, whether your bare concrete is old or new, you can treat it right with chemical hardeners/densifiers. They will not make bad concrete good, but they can make good concrete better.

For more information about chemical hardener/densifiers call The MJA Company at 716-831-7091.

New standards for polished concete


CONCRETE POLISHING COUNCIL
POLISHED CONCRETE AGGREGATE EXPOSURE CHART
Illustration of Differences in Class
A B C

The Polished Concrete Aggregate Exposure Chart is available from the Concrete Polishing Council.

No matter if you are involved in the design phase or the actual construction of a project that includes polished concrete as a flooring component, the five documents recently published by the Concrete Polishing Council (CPC) should be of interest to you.

The CPC is a specialty council of the American Society of Concrete Contractors (ASCC). The documents are intended for the Design Community, Architects, Owners, General Contractors, and Concrete Slab Contractors.

The first two documents, the *"Polished Concrete Appearance Chart"* and *"The Polished Concrete Aggregate Exposure Chart"* (pictured above) define specific characteristics of polished concrete, namely appearance and aggregate exposure. These two charts were developed to set an industry standard which clearly defines these two subjective features of polished concrete.

The history of the publication of these charts was explained by Todd Sharich, ASCC concrete specialists in a recent ASCC News Release. "The founders and charter members of the CPAA kick started the polishing industry by creating standards to help achieve acceptance by the design/build community. However as polishing continues to achieve tremendous growth as a flooring option it became necessary to update these documents. The changes made to the Appearance and Exposure Charts will help contractors meet a defined expectation level. The updated standards will continue to make polished concrete a primary flooring choice that owners can count on for its durability and low maintenance."[1] (Note: The CPAA is the former name of the CPC prior to its merger with the ASCC.)

The three other publications are CPC Position Statements, which again are of significance to polishing contractors, concrete contractors, designers and facility owners. These were made public in November of 2017. The CPC Statements were written by ASCC technical director Bruce Supernant and reviewed by select CPC members. The three position statements cover the topics of **slab protection**, **slip resistance**, and **contractor coordination**. These position papers and the new charts can be found on the ASCC website at:

https://www.ascconline.org/concrete-polishing-council/technical-documents

Questions? Call The MJA Company at 716-831-7091.
The MJA Company is a member of the ASCC and the Concrete Polishing Council.

MJA PROJECTWATCH This is how an 11-year old floor should look.

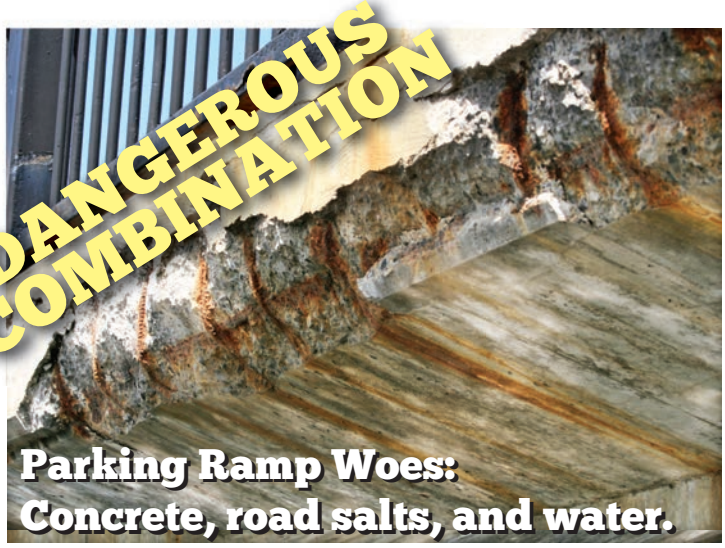
GOYA Distribution Center • Angola, NY, 2007

Goya Foods, Inc. is an American producer of a brand of foods sold in the United States and many Hispanic countries.

- **Harden and densify concrete floors**
- **133,000 square feet of exposed concrete**
- **Product: Seal Hard by L&M Construction Chemicals, Inc.**

Low maintenance, dust-free floors are critical to warehouse operations, especially food-handling environments like GOYA Foods. *See cover story to read more about hardening and densifying concrete floors.*

Contact The MJA Company for an extensive project list. We'll be happy to fill you in on all the details. (716) 831-7091



Designing, building, or maintaining a parking ramp in the Northeast can be a daunting task. Not only are there structural considerations, there is also the fact that in winter months vehicles constantly deposit water and road salts onto the surface. The water and road salts combined with the almost constant freeze thaw cycle that the ramp is exposed to can cause problems.

How do these factors play into the structure and maintenance of the ramp?

It all starts with stress from within the structure and the load placed on it. Small cracks can appear in the surface from this stress. When these small cracks form, water seeps in and freezes when the temperature drops. The water expands as it freezes, widening the crack. This process is repeated and the cracks get deeper. If that isn't bad enough, the water and salt that seeps into the crack will be absorbed into the concrete causing further deterioration.

The water and salts that is absorbed into the concrete will eventually reach the reinforcing steel deep in the concrete. When this happens, expansion occurs due to rust build up. These forces cause further cracks deep in the concrete that may lead to structural damage and very costly repairs.

How can this all be avoided?

Simply put, the surface should be protected with a traffic deck coating. A properly applied coating acts as a barrier to the intrusion of water and thus stops the cycle of damage from starting. To maintain this protection it is also important that the entire ramp and all of its components are inspected at least once a year and repaired if necessary.

Interested in what a comprehensive Parking Structure Inspection Checklist looks like?

Check this: https://tinyurl.com/y737sjl2

You need this if you own a polished concrete floor.

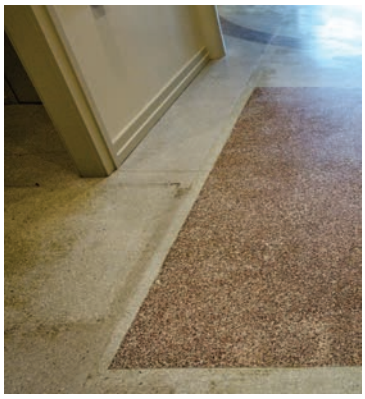
Whether we polished your concrete floor or not, we're offering this **FREE MAINTENANCE GUIDE** for polished concrete floors. It will give you all the steps needed to keep your floor in top-notch shape.

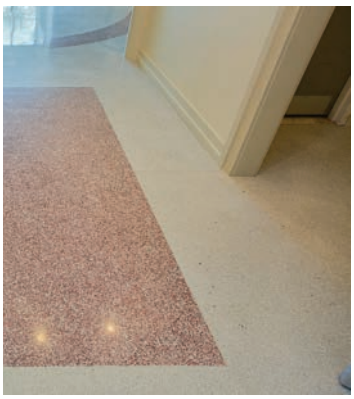
Call 716-831-7091 for your free copy while supplies last.

The MJA Company's environmentally-friendly TerrazzoShine thermal sealing process eliminates the need for costly, time-consuming stripping and waxing. You'll save time and money with TerrazzoShine.

Before TerrazzoShine: Mechanical deterioration, chemical attack, residue, and contamination caused by cleaning and polishing agents diffuse and absorb light, reducing the floor's reflective characteristics.

After TerrazzoShine: The TerrazzoShine process corrects most mechanical deteriorations, restores areas damaged by chemical attacks, and removes residue, leaving a clean, smooth, polished, light-reflecting surface.





Your project. Our reputation.

MJA

The MJA Company

Serving Business, Industry, and Homeowners Since 1988.

- Diamond Polished Concrete
- Epoxy and Polyaspartic Coatings
- Hardener / Densifier
- Concrete Dustproofing
- Crack Repair
- Control Joint & Saw Cut Filling
- Surface Repair
- Underlayments & Toppings
- Concrete Leveling
- Decorative Coloring
- Design Consultation
- Concrete Floor Performance Audits
- Certified Walkway Safety Audits

Offices and Showroom: 65 Clyde Ave • Buffalo, NY 14215
Mail: PO Box 501 • Williamsville, NY 14231-0501
(716) 831-7091 • e-mail: info@theMJAcompany.com
www.theMJAcompany.com

MJA-18-1603-08

THE CONCRETE FLOOR REPORT
NEWS FOR EVERYONE WHO DESIGNS, BUILDS, MAINTAINS, OR OWNS CONCRETE FLOORS
A Publication of The MJA Company, Serving New York Since 1988
65 Clyde Ave • Buffalo, NY 14215

CHANGE SERVICE REQUESTED

For immediate service:
www.TheMJACompany.com
Buffalo: 716-831-7091
Rochester: 585-713-5808

In this issue: