

65 Clyde Ave | Buffalo, NY 14215

CHANGE SERVICE REQUESTED

For immediate service:

Web: theMJAccompany.com
Buffalo: 716-831-7091
Rochester: 585-713-5808

In this issue:

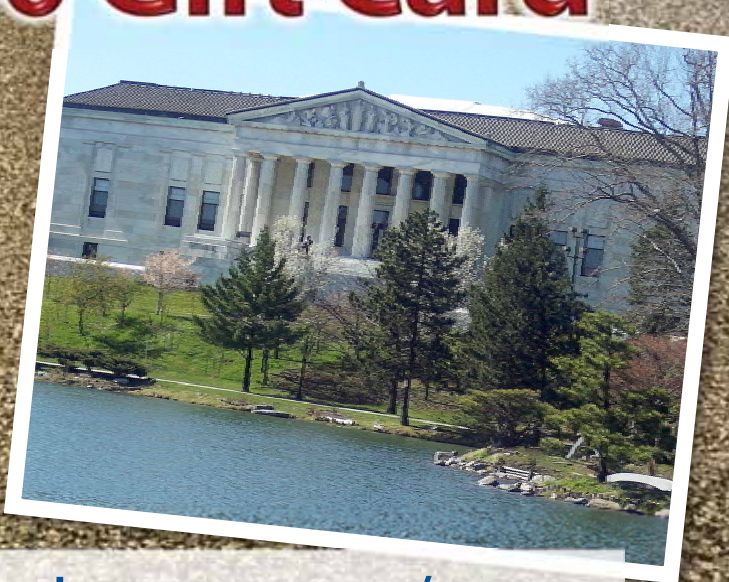
- Concrete Forensics - Understanding Petrographic Analysis
- MJA Project Watch
- New Hire
- Win a \$100 Gift Card



Win a \$100 Gift Card

Name This Building

Just tell us the name of this iconic building for your chance to win a \$100 gift card. Odds of winning are over 2 million times better than winning the Lotto Jackpot and it's FREE.



Enter to win at www.themjacompany.com/promo

Contest ends May 31, 2022

Previous Answer & Winner

Answer to the contest in the last newsletter: Buffalo Central Terminal
Previous winner: Darlene F. of Mach Architecture

Is there a concrete issue?

What if the concrete floor in your new building has a network of cracks running through it? What if, when you run your hand over the surface of the concrete floor in your new warehouse, you can wipe up a lot of gray dust?



Excessive dusting of a concrete floor ²

Generally, problems like these create a question of the serviceability of the concrete floor on a project. Serviceability points to the conditions under which the concrete is still considered useful. Clearly, if the floor or a section of it, has a defect that is sufficient to call into question its usefulness, **it is a major problem.**

What happened?

If there is a question of the slab's serviceability, at this point you need to figure out what happened. If the slab problems are

extensive, unfortunately it often starts a lot of finger pointing as to who is responsible.

To stop the finger pointing, and more importantly figure out what to do, you have to get down to the specifics of what happened. Mistakes can be made during the mixing, placement, curing, and finishing of the concrete floor. How do you determine what happened to cause the problem?

Fortunately, a series of tests included in a petrographic analysis can reveal detailed insight into the composition, placement, and finishing of the concrete.

What is a Petrographic Analysis?

Petrography is a branch of geology that can be applied to concrete and concrete materials. The petrographic analysis for concrete is outlined in ASTM C856/C856M-20 which is titled Standard Practice for Petrographic Examination of Hardened Concrete. This American Society for Testing and Materials standard outlines the procedures for the analysis of hardened concrete.

During the petrographic analysis the petrographer will do a microstructural examination of the concrete. They look at the paste and aggregate in the concrete with both optical and scanning electron microscopes.

Continued from cover page

This examination will give you a lot of information. The analysis allows the petrographer to look for features such as the degree of cement hydration, microcracking, reaction products, breakdown of aggregate, and evidence of poor freeze thaw performance.

Along with the above analysis, an examination of the size and type of aggregate is performed to make sure the appropriate aggregate was used and to see if the aggregate caused any harmful reactions.

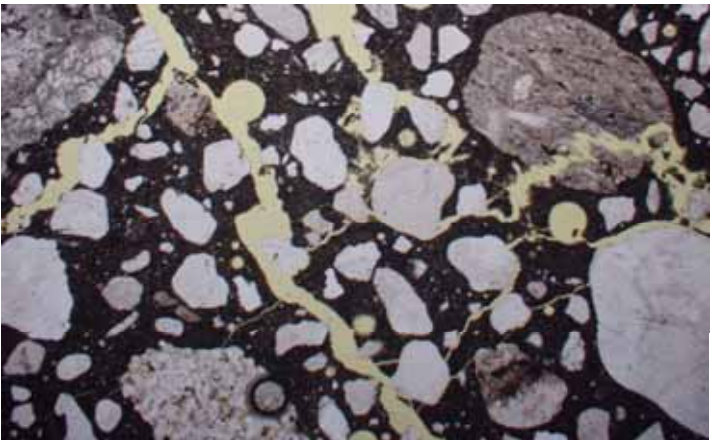
Often an Air Void Analysis (ASTM C586) is also completed. This will provide detailed information about the relative composition and distribution of course and fine aggregate, cement paste, and entrained and entrapped air.

It truly is amazing what can be discovered during the petrographic analysis deep technical dive into a concrete sample.

What does all of this information tell us?

The information gained from a petrographic analysis can answer a number of critical questions. For example, did the materials that constitute the cement paste match the mix specifications, was the concrete cured correctly, does the source and condition of the aggregate in the concrete mirror what was called for in the specifications?

From this information, a judgment of the nature and extent of the problem can be determined and a recommendation can be



Distribution and sizes of entrained air voids within cement paste³

made as to the best course of action. The good news is that a petrographic analysis may be able to suggest a method to repair the slab, which may save quite a bit of money.

On the other hand, if the problem causing the damage is extensive enough and is going to continue to occur, you really do not have much of a choice, the slab should be replaced.

I am sure at this point you are wondering how much an analysis costs. In talking to one of the technicians at Lucideon⁴, a laboratory and on-site consultancy company, I found that the cost of a petrographic analysis of one core sample is currently \$1650. Of course, if there is a large area that is affected several core samples may be needed to get a complete picture.



A researcher using thin section petrography for analysis⁵

What can you do to prevent the need for a Petrographic Analysis?

Needing a petrographic analysis to be done on your floor is not a situation you want to be in. When it comes to the concrete floor in a building, an ounce of prevention, in this case, is worth tons of cure! How can you best avoid these problems?

The answer is in having a preconstruction meeting in which you do a detailed review of the project’s floor plans and the specifications. The prime contractor, and the contractors that provide the concrete, place and cure the concrete, and install the final floor finish should be included in the meeting.

From this detailed discussion you can iron out potential problems in materials, design, construction techniques, environmental factors, and timing that might have a negative effect on the construction of your building. Most importantly, the goal is to prevent the need for petrographic analysis in the future.

Need Help With Your Concrete?

If you have any questions about the treatment, repair, or renovation of your concrete floor, give us a call at 716-831-7091 or email us at info@themjacompany.com.

1. <https://www.geochempet.com/service/petrographic-reports/>
2. <https://concretesouth.com/tech-center/tech-topics-ready-mix>
3. <https://www.petrolab.co.uk/concrete/>
4. <https://www.lucideon.com/>
5. <https://ncptt.nps.gov/blog/petrographic-analysis-for-conservation/>

PATRICK O'HARE
PROJECT MANAGER / ESTIMATOR



Pat is the newest team member at The MJA Company.

He grew up in Depew, NY. He has eleven years experience in the construction field and is very knowledgeable in all aspects of the treatment, repair and renovation of concrete floors. We are excited to have him on board.

MJA PROJECT WATCH

NBT Bank Stadium

Syracuse, NY

- Metropolitan Club
- 6,250 sq. ft. of concrete flooring
- Stained and sealed



SERVING WNY SINCE 1988

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

Offices & Shop:

65 Clyde Ave
Buffalo, NY 14215

716-831-7091

Mailing Address:

PO Box 501
Williamsville, NY 14231-0501

www.theMJAccompany.com