

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

WHY DOES CONCRETE CRACK?

Learn why concrete cracks and how to minimize the risk

Overview

This article is the first in a three-part series about concrete repair. In this segment, we will discuss why concrete cracks and methods to reduce the risk of cracks forming in a new concrete slab. The second article will focus on methods used to repair cracks that have formed and the third will discuss the major causes of concrete slab surface defects and methods used to repair the defects.

Concrete does crack

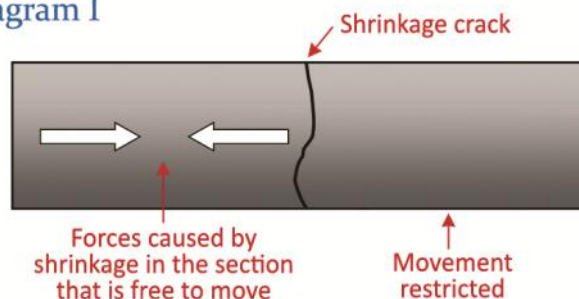
There's an old adage in the construction industry, "We know two things for sure about concrete, it gets hard and it cracks." Random cracks seem to be in concrete floors everywhere: in your home, in commercial buildings, in industrial plants, in warehouse, etc. Unfortunately, in construction the potential that random cracks may occur in a new building's concrete floor is not often on the owner's mind until after the concrete is in place and random cracks have formed. Our job as concrete experts is to explain to the owner why concrete cracks form and what will be done to reduce the risk of random cracks forming.

Why does concrete crack?

While there may be many factors which can lead to random cracks in a concrete slab, there are **two primary causes** for the

cracks. The first type is called **plastic shrinkage cracking**. Shrinkage cracks are caused by a rapid loss of water from the surface of concrete before it has set. In other words, the rate of evaporation of surface moisture exceeds the rate at which rising bleed water can replace it. The rapidly evaporating water leaves space in the concrete. Subsequently, the other materials move into the open space and the slab shrinks. This contraction can cause stress to develop in the slab. If the entire slab could shrink smoothly and uniformly over the subgrade, it may be less of an issue. Unfortunately, due to minor inconsistencies in the subgrade, the concrete is often restrained in some areas and is able to move freely in others. As concrete shrinks and the tension increases, one free to move section may pull away from the adjoining part of the slab that is restrained and a crack forms.

Diagram 1



Continued on next page

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The other most common cause of cracking is called drying shrinkage. This occurs as the slab is curing after placement. As the slab is curing it will lose water to the atmosphere and to a certain extent to the material below the slab. This water loss is slower than during in the plastic phase of the placement of the concrete, but once again if the amount of water lost is not controlled, excessive shrinkage will occur and may cause the concrete to crack. Typically, this cracking will occur within a few days to several weeks after the concrete is placed. The potential of this type of cracking can be reduced by using proper curing methods.

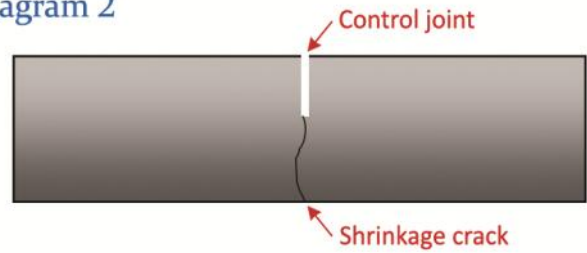
In the case of both of these shrinkage problems, there are design practices that can be used to reduce the shrinkage. These design practices include proper subgrade preparation, using the lowest water content possible, using the maximum size aggregate allowable, using admixtures to reduce shrinkage, and the use of synthetic fibers in the mix.

Control Joints

In addition to mix design, control joints are another widely used method to control the cracks from shrinkage. The control joints are cut into the slab as soon as possible after placement in predetermined locations. These saw cuts create weakened planes in the concrete slab. As the tension due to shrinkage increases, the concrete should crack along these weakened planes. The actual crack occurs below the straight control joint. The concrete cracks, but now the appearance of random cracks has been elimi-

nated. These control joints can be left open or can be filled with a joint filler depending on the use of the floor.

Diagram 2



Develop a Plan

Looking at all of the variables that impact a concrete slab that is being placed, it should be obvious that you cannot absolutely guarantee that random cracks will not form in the slab. On the other hand, with proper planning you can greatly reduce the risk of random cracks from forming in a concrete slab. The key to a good plan is to have detailed specifications that include a pre-placement meeting with everyone involved in the design, placement, and final finish of the slab. This meeting should include the owner or a representative of the owner. During the meeting you should discuss how the slab is going to be placed and what precautions are going to be taken throughout the placement, curing, and final finish to produce the best floor possible.

Have any questions about the treatment, repair, or renovation of your concrete floor? **Call us at 716-831-7091 or email us at info@themjaco.com.**



**PROJECT
WATCH**

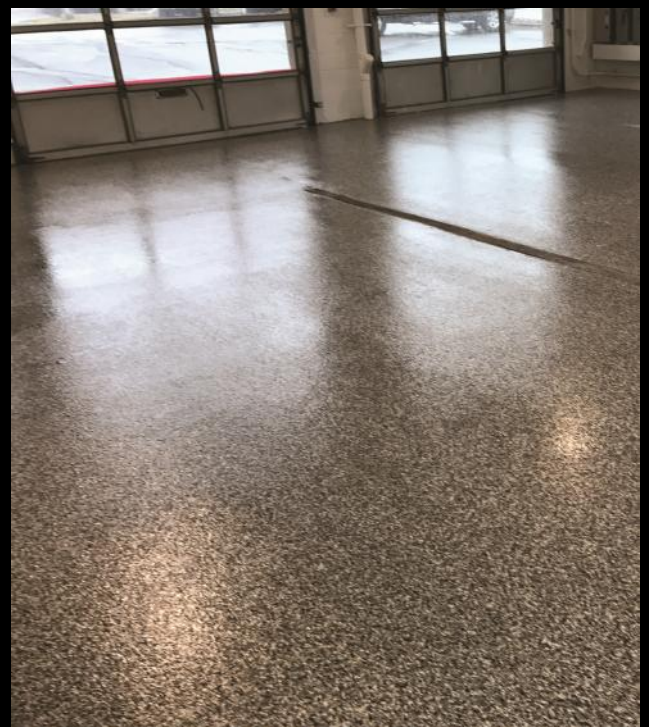
CARSTAR West Seneca

West Seneca, NY

1,250 sq. ft. of a decorative flake epoxy system

Description

A decorative flake epoxy floor system was used as a protective coating in CarStar's inspection bays. It consists of an initial primer coat, a base coat with a decorative flake broadcast, and a final polyaspartic topcoat. It is a seamless, easy to clean, durable floor coating.



THE MJA COMPANY NAMED A **SIKAFLOOR** MASTER INSTALLER

Sika Corporation has recognized The MJA Company as a Sikafloor Master Installer for 2020. The MJA Company is among a select group of flooring contractors recognized for their commitment to high quality resinous floor installations.

Each year, every Sikafloor Installer goes through a rigorous training and evaluation program to assure that they meet Sika's high standards. In addition, each contractor is evaluated and rated annually on a variety of technical and business criteria including craftsmanship, longevity and responsiveness to customer needs.

"We are pleased to welcome The MJA Company as a Sikafloor Master Installer," said Stew Snoddy, senior vice president of Sika Corporation's Flooring Division. "Master level installers are artisans who daily demonstrate their commitment to quality and continued improvement of their impressive skills."



Sika Corporation is a global leader with over 100 years of experience in building materials and restoration technologies. Sika's high performance, seamless floor and wall systems are trusted and relied upon by designers and facility managers for their outstanding performance, durability, easy maintenance, and aesthetic enhancement. Sikafloor products are installed in a wide range of industries that include food and beverage, electronics and static control, clean rooms, pharmaceuticals, education, transportation, commercial / institutional construction, and general manufacturing.

NIAGARA MACHINE LUNCH & LEARN - AIA CREDIT



PLEASE JOIN US ON



October 13, 2020

We will have a demonstration of the
Diamapro HS-UV system
on our shop floor and an AIA Credit
Lunch and Learn presentation.

Call or email to register.

Spots are limited, first come first serve.



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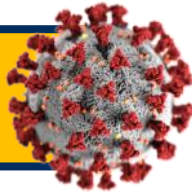
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OUR RESPONSE TO COVID-19



The MJA Company prides itself on a strong company focus on safety. Our response to the COVID-19 pandemic was made easier in part due to our long standing practice of strict adherence to respiratory protection protocols for silica safety. We continue to follow the latest federal, state, and local guidance and protocols to protect both our employees and the customers that rely on us to complete their projects in a timely manner.

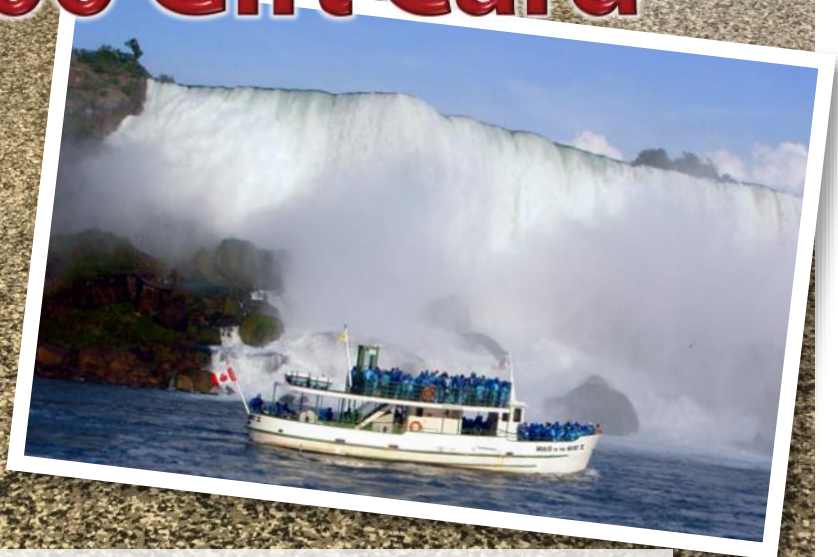
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- MJA Project Watch
- Win a \$100 Gift Card

Win a \$100 Gift Card

Name This Boat

Just tell us the name of the boat pictured in the photo at the right for your chance to win a \$100 gift card to be used anywhere you want.



Enter to win at www.themjacompany.com/promo

Contest ends September 30, 2020

Previous Answer & Winner

Answer to the contest in the last newsletter: Erie Basin Marina
Previous winner: Karen K. of Kirst Commercial Real Estate