



Concrete Parking in Practice

Concrete Parking in Practice is a series of publications from the Maryland Ready Mix Concrete Association (MRMCA) to help specifiers become more familiar with design and benefits of concrete parking lots.

CPIP No. 2

Freeze and Thaw Protection

Exterior concrete surfaces exposed to cycles of freezing and thawing, and deicing chemicals, are susceptible to progressive deterioration. Following proper ACI guidelines for quality concrete and concrete placement can help make it more durable.

Concrete is a porous material. Absorbed water in concrete capillaries can expand up to 9% after freezing. As the water freezes, the ice forces water through the concrete resulting in very high hydraulic pressures. Cumulative freeze-thaw cycles lead to concrete deterioration.

The use of air entrainment provides tiny air bubbles in the paste where the displaced water can enter during ice formation. An adequate air void system reduces hydraulic pressures and keeps the concrete from deterioration.

Following ACI 201 "Guide to Durable Concrete" and the use of 'durable aggregates' and proper placing, finishing, curing and sealing of the concrete are other ways to increase hardened concrete's resistance to cycles of freezing and thawing.



These tips will help prevent future problems.

- Always use air entrained concrete for exterior projects.
- For added protection, you can seal your exterior concrete with a penetrating concrete sealer once a year.
- Never use deicing chemicals to combat icy surfaces, such as chloride base, ammonium nitrate or ammonium sulfate. These deicers attack and disintegrate portland cement concrete. Instead use clean sand for traction.
- When fertilizing your lawn, limit overspray and sweep any fertilizer from your concrete surface.

What is the next step?

The MRMCA provides an AIA-approved parking lot design class that may be used for Professional Development Hours (PDH's). We also participate in a national Design Assistance Program (DAP) and we cover the costs of the first project within the state of Maryland. Depending on project specifics, we will offer additional DAP projects at little or no cost. All we need are the current CAD drawings and a few pieces of project information. Contact us for more details.

Maryland Ready Mix Concrete Association

PO Box 617 • Frederick, MD 21705 • info@MarylandConcrete.com • 866-367-2662 (866-FOR-CONC)