AGGREGATE & READY MIX
ASSOCIATION OF MINNESOTA

MORTAR FLAKING

Introduction

Concrete is a mixture of natural sand and stone that is glued together with portland cement, supplementary cementitious materials, water, and admixtures. You can expect some variations in surface and performance because concrete is mostly made of natural materials. Concrete can provide long-term durability and value when you use quality materials, and place, cure and maintain it properly. This document addresses a specific concrete issue and provides guidance on how to prevent it.

What is mortar flaking?

Mortar flaking is a particular form of scaling where small sections of surface concrete are dislodged. They usually are smaller than a dime and located directly above coarse aggregate particles. Mortar flaking is typically very shallow in depth and consists of distinct delamination (flakes). It typically does not impact the remainder of the concrete surface.

Why does mortar flaking occur?

Mortar flaking occurs at the surface where the mortar and aggregate don't bond properly because the concrete is not cured adequately or promptly. The mortar over the aggregates dries out, undergoes shrinkage, loosens, and flakes off.

This dislodging can occur immediately or after freeze and thaw cycles.

Is my concrete ok?

Yes, mortar flaking typically is cosmetic and does not affect its long-term performance.

How can I prevent mortar flaking?

Cure the concrete immediately after finishing, not a day or days later. Even a delay of 30 minutes can cause damage.

The problem can be exacerbated by rapid surface drying caused by high temperatures, low humidity and windy conditions. Under these conditions, use evaporation retardants, fog spraying or plastic sheeting over the concrete between operations to reduce evaporation. (Note: Plastic sheeting may cause surface discoloration.)

To ensure adequate bonding between the mortar and aggregate, keep the cured concrete moist for at least seven days. For curing details, refer to ARM Exterior Concrete Guidelines Brochure.

Is there a difference between mortar flaking and pop-outs?

Yes. Mortar flaking is caused by the drying of mortar, whereas pop-outs are an aggregate issue. Refer to the ARM Freeze-Thaw Concrete Pop-outs Brochure for more detail.

For more information, call your local concrete contractor, ready mix producer or www.chooseconcrete.com.

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